

Staff Assessment

CALIFORNIA  
ENERGY  
COMMISSION

# UNITED GOLDEN GATE POWER PROJECT, PHASE 1

Application For Certification 00-AFC-5  
San Francisco International Airport  
San Mateo County

STAFF REPORT

JANUARY 2001  
(00-AFC-5)



Gray Davis, Governor

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**CALIFORNIA  
ENERGY  
COMMISSION**

**SITING OFFICE**

Kevin Kennedy, Ph.D.  
*Energy Commission Project Manager*

Roger E. Johnson,  
*Manager*

**ENERGY FACILITIES SITING &  
ENVIRONMENTAL PROTECTION DIVISION**

Robert L. Therkelsen  
*Deputy Director*

# EXECUTIVE SUMMARY

Kevin M. Kennedy

## INTRODUCTION

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This Staff Assessment (SA) contains the California Energy Commission (Energy Commission) staff's evaluation of El Paso Merchant Energy Company's (El Paso's) Application for Certification (AFC) (00-AFC-5) for Phase I of the United Golden Gate Power Project (UGGPP). The UGGPP electric generating plant and related facilities, such as the electric transmission line, natural gas pipeline and water lines, are under the Energy Commission's jurisdiction and cannot be constructed or operated without the Energy Commission's certification.

Staff is an independent party in the proceedings. This SA is a staff document, presenting staff's independent analysis. It examines engineering and environmental aspects of UGGPP, based on the information available at that time of document creation. The SA contains analyses similar to those contained in Environmental Impact Reports required by the California Environmental Quality Act (CEQA). It is not a Committee document nor is the SA a final or proposed decision on the proposal. The SA presents staff's conclusions and proposed conditions that apply to the design, construction, operation, and closure of the proposed facility, if certified.

## BACKGROUND

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On September 29, 2000, El Paso filed an AFC with the Energy Commission to construct and operate Phase I of UGGPP. The application was filed under the terms of Public Resources Code section 25552, which provides a four-month expedited permitting process for proposed simple-cycle power plants that can be online by August 1, 2001.

On October 11, 2000, the Energy Commission determined that the application should not be accepted due to data inadequacies. On October 18 and 24, the applicant filed supplemental information to address the list of data inadequacies adopted by the Energy Commission. The Energy Commission deemed the application complete at its October 25 business meeting. The Committee appointed by the Energy Commission to hear this case found that this project qualifies for the four-month expedited process on November 20. The full Commission accepted the Committee's determination at the December 6 business meeting.

On December 19, 2000, The Committee granted a request by El Paso to extend the four-month deadline by two weeks. Under the current scheduling order for this case, the Committee anticipates completing the Presiding Members Proposed Decision (PMPD) on February 2, 2001. The full Commission is expected to make a final certification decision at the March 7, 2001, Business Meeting, following the close of the 30-day comment period on the PMPD.

The analyses contained in this SA are based upon information from: 1) the AFC; 2) subsequent amendments; 3) responses to data requests, workshops and site visits; 4) supplementary information from federal, state and local agencies; and 5) existing documents and publications.

## PROJECT DESCRIPTION

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El Paso proposes to build Phase I of UGGPP on a portion of the San Francisco International Airport (SFIA). The project site is approximately 2 acres adjacent to the United Airlines Maintenance and Operations Center (UMOC), across the fence line from the United Cogeneration Inc. (UCI) cogeneration power plant. The project site is currently a portion of a parking lot used by UMOC employees. The project site is currently a portion of a parking lot used by UMOC employees. See **PROJECT DESCRIPTION Figure 2** for the local setting of the project. If the project is certified, El Paso plans to begin construction in March, 2001, and to begin commercial operation by August 1, 2001.

Phase I of the UGGPP is a proposed nominal 51 MW natural gas-fired simple-cycle power plant. This nominal rating is based on El Paso's evaluation of the preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure. The project will use a General Electric LM 6000 combustion turbine generator with a high temperature selective catalytic reduction (SCR) system and a 140-foot stack. The project will also include a gas compressor, a 115 kV electrical switchyard, an aqueous ammonia injection system, a temporary water treatment system, and a control trailer. The project will tie into the existing UCI infrastructure for natural gas, transmission grid interconnection, and water supply. No off-site linear facilities are proposed as part of the Phase I UGGPP. A more complete description of the project is contained in the **PROJECT DESCRIPTION** section of this SA.

## STAFF'S ASSESSMENT

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Each technical area section of the SA contains a discussion of impacts, and where appropriate, mitigation measures and conditions of certification. The SA includes staff's assessments of:

- the environmental setting of the proposal;
- impacts on public health and safety, and measures proposed to mitigate these impacts;
- environmental impacts, and measures proposed to mitigate these impacts;
- the engineering design of the proposed facility, and engineering measures proposed to ensure the project can be constructed and operated safely and reliably;
- project closure;
- project alternatives;

- compliance of the project with all applicable laws, ordinances, regulations and standards (LORS) during construction and operation; and
- proposed conditions of certification, where these can be identified at this time.

In this SA, the staff has been able to complete its analyses and make a preliminary recommendation in all of the technical areas contained in this SA (listed in the table below). In each of these topic areas staff believes that if recommendations and conditions of certification are implemented, Phase I of UGGPP will be in compliance with the applicable LORS, and no significant adverse direct, indirect, or cumulative impacts will occur.

Air Quality	Public Health
Alternatives	Reliability
Biological Resources	Socioeconomic Resources
Cultural Resources	Soil & Water Resources
Efficiency	Traffic & Transportation
Facility Design	Transmission System Engineering
Geology & Paleontology	Visual Resources
Hazardous Materials	Waste Management
Land Use	Worker Safety & Fire Protection
Noise	General Conditions & Compliance

Unresolved issues remain in land use. In addition, staff is waiting for action by other parties to finalize its analysis for air quality and transmission system engineering. For air quality and transmission system engineering, staff is waiting for action by other parties to finalize its analysis. Staff expects to submit supplemental testimony in these areas once the additional information is available. For land use, the applicant has not yet finalized a lease for the project site. Staff has proposed a condition of certification that will require confirmation that the lease has been signed by all appropriate parties before project construction can begin. Staff anticipates that testimony from El Paso and the San Francisco Airport Commission (Airport Commission) during the evidentiary hearing will enable the Committee to determine whether the lease will be completed and approved in time to allow El Paso to bring Phase I of UGGPP on-line by August 1, 2001, as required for certification under section 25552 of the Public Resources Code.

The following paragraphs describe the status of the remaining issues.

**Air Quality:** Staff has determined that the project will not have a significant adverse impact on air quality if the conditions of certification included in this Staff Assessment and in the Bay Area Air Quality Management District's (BAAQMD) Preliminary Determination of Compliance (PDOC) are adhered to. Staff has given minor comments on the PDOC to the BAAQMD, and anticipates additional comments will be given by the California Air Resources Board (CARB) and the U.S. Environmental Protection Agency (EPA). Staff anticipates completion of the Final Determination of Compliance (FDOC) in early February. Staff does not expect significant changes from the PDOC to the FDOC, and will submit supplemental testimony to the Committee after receiving the FDOC.

**Land Use:** El Paso proposes to lease the project site from United Airlines, which currently leases the land from the Airport Commission. The lease for the project site has not yet been finalized, and will require approval by the Airport Commission. Staff has included a condition of certification requiring El Paso to document that the lease has been finalized and approved before the start of ground disturbance.

**Transmission System Engineering:** Staff has analyzed the interconnection of the project to the electrical grid and determined that it is unlikely to have significant adverse impacts. However, a formal interconnection study by PG&E, owner of the transmission system to which the project will connect, will not be completed until late January. PG&E has stated that it has previously studied interconnecting a larger project (95 MW) at this location and found that project would not create system impacts or limitations. The PG&E interconnection study and the review of that study by the California Independent System Operator (Cal-ISO) will be entered into evidence in this proceeding when they are received. If necessary, staff will also enter supplemental testimony following review of the PG&E study and Cal-ISO comments.

## **STAFF RECOMMENDATION**

The staff has concluded that if all recommended conditions of certification are adopted by the Commission and implemented by the Applicant, no significant adverse environmental impacts will result from Phase I of UGGPP.

UNITED GOLDEN GATE POWER PROJECT, PHASE I (00-AFC-5)  
STAFF ASSESSMENT

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# INTRODUCTION

Testimony of Kevin M. Kennedy, Ph.D.

## PURPOSE OF THIS REPORT

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On September 29, 2000, El Paso Merchant Energy (El Paso) filed an Application for Certification (AFC) seeking approval from the California Energy Commission (Energy Commission) to construct and operate Phase I of the United Golden Gate Power Project (UGGPP). On October 25, 2000, the California Energy Commission found the AFC to be data adequate. A finding of data adequacy by the Commission begins staff's analysis of the project.

This project is being reviewed under the four-month expedited permitting process set forth in section 25552 of the Public Resources Code. Projects considered under this expedited process must be able to be on-line by August 1, 2000. If a project is certified under this section, within three years it must either cease operation or be replaced by a combined-cycle power plant. El Paso is expected to submit an AFC for a 570 MW replacement combined-cycle plant at the same location.

The Energy Commission is required to make a decision within four months of accepting an application for a projects under section 25552 of the Public Resources Code, unless a later date is "mutually agreed upon by the commission and the applicant, provided that the thermal powerplant and related facilities remain likely to be in service before or during August 2001" (Pub. Resources Code, §25552(c)). The Committee has agreed to extend the four month deadline by two weeks, as requested by El Paso. Staff believes that this delay in the certification schedule will not affect the project's ability to be in service by August 1, 2001.

This Staff Assessment (SA) presents the Energy Commission staff's independent analysis of El Paso's AFC for the Phase I of the UGGPP. The air quality chapter incorporates the Bay Area Air Quality Management District's Preliminary Determination of Compliance with rules and regulations of the District. The SA is prepared pursuant to Title 20, California Code of Regulations, §1742, 1742.5, 1743 and 1744. The SA is a staff document. It is neither a Committee document, nor a draft decision or proposed decision.

## CONFORMANCE WITH SECTION 25552 REQUIREMENTS

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The expedited permitting process enacted in section 25552 of the Public Resources Code requires the Commission to "issue a decision granting a license to a simple cycle thermal powerplant and related facilities pursuant to this section if the commission finds all of the following: (1) The thermal powerplant is not a major stationary source or a modification to a major stationary source, as defined by the federal Clean Air Act, and will be equipped with the best available control technology, in consultation with the appropriate air pollution control district.... (2) The thermal powerplant and related facilities will not have a significant adverse effect on the environment as a result of construction or operation. (3) With respect to a project for a thermal powerplant and related facilities reviewed under the process

established by this section, the applicant has a contract with a general contractor and has contracted for an adequate supply of skilled labor to construct, operate, and maintain the thermal powerplant” (Pub. Resources Code §25552(d)). Staff has determined that the project is not a major stationary source and, in consultation with the Bay Area Air Quality Management District (BAAQMD), has made a preliminary determination that the project will be equipped with the best available control technology (BACT). Confirmation that the plant will use BACT is expected when BAAQMD releases its Final Determination of Compliance in late January. Staff’s evaluation of the project, as presented in this SA, shows that the project will not have a significant adverse effect on the environment as a result of construction or operation. At this time, staff is not aware that El Paso has reached agreement on a contract with a general contractor and has contracted with an adequate supply of skilled labor to construct, operate, and maintain the facility. At this time, staff recommends that the Committee find that the project satisfies conditions (1) and (2) of section 25552(d). The Committee will need to seek evidence from El Paso that condition (3) of section 25552(d) has been met.

## ORGANIZATION OF THE REPORT

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The Staff Assessment describes the following:

- the proposed project;
- the existing environmental setting;
- whether the facilities can be constructed and operated safely and reliably in accordance with applicable laws, ordinances, regulations and standards (LORS);
- the environmental consequences of the project including potential public health and safety impacts;
- cumulative analysis of the potential impacts of the project, along with potential impacts from other existing and known planned developments;
- mitigation measures proposed by the applicant, staff, interested agencies and intervenors that may lessen or eliminate potential direct and cumulative impacts;
- proposed conditions under which the project should be constructed, operated and closed, if it is certified; and
- project alternatives.

The analyses contained in this SA are based upon information from: 1) the AFC; 2) supplements to the AFC; 3) responses to data requests; 4) local and state agencies; 5) concerned citizens; 6) existing documents and publications; and 7) independent field studies and research. The analyses for most technical areas include discussions of proposed conditions of certification. Each proposed condition of certification is followed by a proposed means of “verification.” The verification is the Energy Commission Compliance Unit’s method of ensuring post-certification compliance with adopted requirements. The SA presents conclusions

and proposed conditions of certification that would apply to the design, construction, operation and closure of the proposed facility.

The SA contains an Executive Summary, Introduction, Project Description, and Project Alternatives. The environmental, engineering, and public health and safety analyses of the proposed project are presented, with a separate chapter for technical area. Each of the technical area assessments includes a discussion of:

- laws, ordinances, regulations and standards (LORS);
- the regional and site-specific setting;
- project specific and cumulative impacts;
- mitigation measures (if applicable);
- closure requirements;
- conclusions and recommendations; and
- conditions of certification for both construction and operation (if applicable).

## **ENERGY COMMISSION SITING PROCESS**

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The California Energy Commission has the exclusive authority to certify the construction and operation of thermal electric power plants 50 megawatts (MW) or larger. The Energy Commission certification is in lieu of any permit required by state, regional, or local agencies, and federal agencies to the extent permitted by federal law (Pub. Resources Code, §25500). The Energy Commission must review AFCs to assess potential environmental impacts including potential impacts to public health and safety, potential measures to mitigate those impacts (Pub. Resources Code §25519), and compliance with applicable governmental laws or standards (Pub. Resources Code, §25523 (d)).

This project is being reviewed under the four-month expedited permitting process of section 25552 of the Public Resources Code. This section shortens the time the Energy Commission has to act on an application for a qualifying simple-cycle power plant, and requires the Commission to grant a license to projects that meet certain criteria, as discussed above. Staff has reviewed this project following the procedures established in the Energy Commission's siting regulations.

The Energy Commission's siting regulations require staff to independently review the AFC and assess whether the list of environmental impacts contained is complete, and whether additional or more effective mitigation measures are necessary, feasible and available (Cal. Code Regs., tit. 20, §1742 and 1742.5(a)).

In addition, staff must assess the completeness and adequacy of the health and safety standards, and the reliability of power plant operations (Cal. Code Regs., tit. 20, §1743(b)). Staff is required to develop a compliance plan (coordinated with other agencies) to ensure that applicable laws, ordinances, regulations and standards are met (Cal. Code Regs., tit. 20, §1744(b)).

Staff conducts its environmental analysis in accordance with the requirements of the California Environmental Quality Act (CEQA). An Environmental Impact Report (EIR) is not required as the Energy Commission's site certification program has been certified by the Resources Agency (Pub. Resources Code, §21080.5 and Cal. Code Regs. tit. 14, §15251 (k)). The Energy Commission is the CEQA lead agency.

The staff has prepared this SA that presents the staff's analysis, conclusions, and recommendations for the Committee, applicant, intervenors, agencies, other interested parties and members of the public. The SA serves as staff's testimony on a proposal. Staff's assessment is only one piece of evidence that will be considered by the Committee in reaching a decision on whether or not to recommend that the full Energy Commission approve the proposed project. At the public evidentiary hearings that will be noticed by the Committee, all parties will be afforded an opportunity to present evidence, cross-examine witnesses, and to rebut the testimony of other parties, thereby creating a hearing record on which a decision on the project can be based. The hearing before the Committee also allows all parties to argue their positions on disputed matters, if any, and it provides a forum for the Committee to receive comments from the public and other governmental agencies.

Following the hearings, the Committee's recommendation to the full Energy Commission on whether or not to approve the proposed project will be contained in a document entitled the Presiding Members' Proposed Decision (PMPD). Following publication, the PMPD is distributed in order to receive written public comments. Comments on the PMPD will be accepted for 30 days from its publication. At the conclusion of the comment period, the Committee may prepare a revised PMPD. A revised PMPD is required to undergo a 15-day comment period. At the close of the comment period for the revised PMPD, the PMPD is submitted to the full Energy Commission for a decision. Within 30 days of the Energy Commission decision, any party may appeal the decision to the Energy Commission.

A Compliance Monitoring Plan and General Conditions will be assembled from conditions contained in the SA and other evidence presented at the hearings. The Compliance Monitoring Plan and General Conditions will be presented in the PMPD. The Energy Commission staff's implementation of the plan ensures that a certified facility is constructed, operated, and closed in compliance with the conditions adopted by the Energy Commission. The proposed Compliance Monitoring Plan and General Conditions are included in the SA.

## **PUBLIC AND AGENCY COORDINATION**

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Coordination has occurred with the numerous local, state and federal agencies that have an interest in the project. Particularly, Energy Commission staff has worked with the staff of the San Francisco Airport Commission, the City and County of San Francisco, the Bay Area Air Quality Management District, and the Bay Conservation and Development Commission. Staff has received no input on the project from intervenors or members of the general public.

# PROJECT DESCRIPTION

Kevin M. Kennedy

## NATURE AND PURPOSE OF THE PROJECT

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El Paso Merchant Energy (El Paso) proposes to construct and operate Phase I of the United Golden Gate Power Project (UGGPP). El Paso has proposed Phase I to help meet peak power demand in California for three years starting in August 2001. Phase I is a simple-cycle power plant that is being considered under the terms of the four-month expedited permitting process enacted in section 25552 of the Public Resources Code. El Paso is expected to submit an Application for Certification (AFC) for a 570 MW combined-cycle power plant that would replace Phase I. That AFC will be considered by the Energy Commission in a separate certification process.

## PROJECT LOCATION

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The applicant intends to locate Phase I of the UGGPP on a portion of the San Francisco International Airport (SFIA). See **Project Description Figure 1**. The project site is approximately 2 acres adjacent to the United Airlines Maintenance and Operations Center (UMOC). See **Project Description Figure 2**. The site is across the fence line from the United Cogeneration Inc. (UCI) cogeneration power plant, and would tie into existing UCI infrastructure for natural gas, transmission grid interconnection, and water supply. No off-site linear facilities are proposed as part of the Phase I UGGPP. The project site is currently a portion of a parking lot used by UMOC employees.

The project site is owned by the City and County of San Francisco and operated by the San Francisco Airport Commission (Airport Commission). The Airport Commission leases land, including the project site, to United Airlines for the UMOC. El Paso plans to sublease the site from United. Negotiations over the sublease agreement are still in progress. The sublease will also require approval by the Airport Commission. The aerial view of the project vicinity in **Project Description Figure 3** shows both the Phase I and the anticipated replacement project sites along with the existing UMOC and UCI facilities.

## POWER PLANT

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Phase I of the UGGPP is a proposed nominal 51 MW natural gas-fired simple-cycle power plant. This nominal rating is based on El Paso's evaluation of the preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure. The project will occupy about 2 acres and contain the combustion turbine generator and various support facilities.

## PROJECT DESCRIPTION FIGURE 1 UGG Regional Location

## PROJECT DESCRIPTION FIGURE 2 UGG Local Setting

## PROJECT DESCRIPTION FIGURE 3 Aerial Photo



The project will use a General Electric LM 6000 combustion turbine generator with a high temperature selective catalytic reduction (SCR) system and a 140-foot stack. The project will also include a gas compressor, a 115 kV electrical switchyard, an aqueous ammonia injection system, a temporary water treatment system, and a control trailer.

**Project Description Figure 4** shows the preliminary site plan for Phase I of the UGGPP. **Project Description Figure 5** shows elevations of the power plant facilities. **Project Description Figure 6** provides a simulation of what the plant will look on the site.

## TRANSMISSION LINE FACILITIES

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The project will connect to the transmission grid through the UCI switchyard adjacent to the project site. This connection will require the addition of a 115 kV breaker, a disconnect switch, bus work, and miscellaneous other equipment to the UCI switchyard.

## NATURAL GAS PIPELINE

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Natural gas will be supplied to the project through a connection with the existing UCI natural gas supply line. This connection will be made at an existing utility tunnel located in the southern portion of the UCI site, approximately 50 feet west of the UGGPP site and approximately 450 south-southwest of the location of the UGGPP Phase I gas metering station.

## WATER SUPPLY AND WASTE WATER TREATMENT

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Water requirements for the project are less than 100 gallons per minute, peak flow. El Paso plans to use wastewater from the United Airline Metal Removal Plant (MRP). The MRP has sufficient capacity to serve Phase I of the UGGPP, though the MRP's typical recent output might not be sufficient to supply both Phase I of the UGGPP and UCI. UCI plans to switch to MRP wastewater for its raw water supply during 2001.

The project's minimal potable water supply needs will be provided by the airport's potable water supply. Connection to both water supplies will be made at the existing utility tunnel at the south end of the UCI site.

Process wastewater discharge will be sent to UCI's cooling towers. Sanitary wastewater will be sent to the airport's sanitary sewer system.

## **Project Description Figure 4 preliminary site plan**

## **Project Description Figure 5 elevations**

## **Project Description Figure 6 simulation**

## CONSTRUCTION AND OPERATION

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El Paso plans to complete construction and start operation of the simple-cycle unit by August 1, 2001. During construction, up to approximately 30 construction jobs will be created over the four month construction schedule. A single plant operator per shift will be needed to operate the plant.

## CLOSURE OR REPLACEMENT

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Phase I of UGGPP is being considered under section 25552 of the Public Resources Code. Under the terms of this section, the project must either “cease to operate and the permit will terminate within three years... [or] be modified, replaced, or removed within a period of three years with a combined-cycle powerplant...” (Pub. Resources Code §25552(e)(5)). El Paso intends to submit an AFC for a replacement combined-cycle powerplant. If this AFC is received and the replacement project is certified, that certification will include appropriate conditions for the transition from the Phase I simple-cycle powerplant to the combined-cycle powerplant and the eventual closure of the replacement facility. If a replacement combined-cycle powerplant is not certified, the Phase I certification will terminate three years after the date of certification and closure of the facility will proceed as described in the **General Conditions Including Compliance Monitoring and Closure Plan** section.



# AIR QUALITY

Testimony of W. Walters and N. Behmanesh

## INTRODUCTION

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This analysis evaluates the expected air quality impacts of the emissions of criteria air pollutants due to planned construction and operation of the United Golden Gate Power Project Phase I (UGGPP) as proposed by the El Paso Merchant Energy Company (El Paso). Criteria air pollutants are those for which a federal or state ambient air quality standard has been established to protect public health. They include ozone (O<sub>3</sub>), nitrogen dioxide (NO<sub>2</sub>), carbon monoxide (CO), sulfur dioxide (SO<sub>2</sub>), precursor organic compounds (POC), and particulate matter less than 10 microns in diameter (PM<sub>10</sub>).

In carrying out the analysis, the California Energy Commission staff evaluated the following major points:

- whether the UGGPP is likely to conform with applicable Federal, State and Bay Area Air Quality Management District air quality laws, ordinances, regulations and standards, as required by Title 20, California Code of Regulations, section 1742.5 (b);
- whether the UGGPP is likely to cause significant air quality impacts, including new violations of ambient air quality standards or contributions to existing violations of those standards, as required by Title 20, California Code of Regulations, section 1742 (b); and
- whether the mitigation proposed for the UGGPP is adequate to lessen the potential impacts to a level of insignificance, as required by Title 20, California Code of Regulations, section 1744 (b).

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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### FEDERAL

The federal Clean Air Act requires any new major stationary sources of air pollution and any major modifications to existing major stationary sources to obtain a construction permit before commencing construction. This process is known as New Source Review (NSR). Its requirements differ depending on the attainment status of the area where the major facility is to be located. Prevention of Significant Deterioration (PSD) requirements apply in areas that are in attainment of the national ambient air quality standards. The non-attainment area NSR requirements apply to areas that have not been able to demonstrate compliance with national ambient air quality standards. The entire program, including both PSD and non-attainment NSR permit reviews, is referred to as the federal NSR program.

Title V of the federal Clean Air Act requires states to implement and administer an operating permit program to ensure that large sources operate in compliance with the requirements included in the Code of Federal Regulations 40, part 70. A Title V

permit contains all of the requirements specified in different air quality regulations that affect an individual project. This project does not trigger Title V permitting.

The U.S. Environmental Protection Agency (EPA) has reviewed and approved the Bay Area Air Quality Management District's regulations and has delegated to the District the implementation of the federal PSD, Non-attainment NSR, and Title V programs. The District implements these programs through its own rules and regulations, which are, at a minimum, as stringent as the federal regulations.

The UGGPP is also subject to the federal New Source Performance Standards (NSPS). These standards include a NO<sub>x</sub> emissions concentration of no more than 75 parts per million (ppm) at 15 percent excess oxygen (ppm@15%O<sub>2</sub>), and a SO<sub>x</sub> emissions concentration of no more than 150 ppm@15%O<sub>2</sub>.

The U.S. EPA has delegated its Prevention of Significant Deterioration (PSD) and Non-attainment New Source Review (NSR) requirements to the District. This delegation is only done for air districts that are able to demonstrate to the satisfaction of U.S. EPA that their regulatory programs are at least as stringent as the federal PSD and Non-attainment NSR programs. The District will issue an Authority to Construct only after this project secures a license from the California Energy Commission. This permit will be the equivalent to a federal PSD and federal Non-attainment NSR permits.

In addition, the U.S. EPA has also delegated to the District the authority to implement the federal Clean Air Act Title IV "acid rain" and Title V "operating permit" programs. The Title IV regulation requirements will include obtaining a Title IV permit prior to operation, the installation of continuous emission monitors to monitor acid deposition precursor pollutants, and obtaining Title IV emission trading credits. The Title V operating permit is issued only after a facility is in operation and it would be the same as the District's Permit to Operate. Therefore, compliance with the District's rules and regulations will result in compliance with federal requirements.

## **STATE**

California State Health and Safety Code, Section 41700, requires that: "no person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerate number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause, injury or damage to business or property."

The project, assuming full compliance with the District's rules and regulations, should comply with Section 41700 of the California State Health and Safety Code.

## **LOCAL**

As part of the Energy Commission's licensing process, in lieu of issuing a construction permit to the applicant for the UGGPP, the District will prepare and present to the Commission a Determination of Compliance (DOC). The DOC will evaluate whether and under what conditions the proposed project will comply with



the District's applicable rules and regulations, as described below. The Energy Commission staff will coordinate its air quality analysis with the District staff as they prepare the DOC, will review and comment on the Preliminary DOC to identify any issues of concern, and will incorporate the Final DOC recommended conditions of certification in supplemental testimony presented to the Committee after the Final DOC is completed.

The project is subject to the specific District rules and regulations that are briefly described below:

## **REGULATION 2**

Rule 1 - General Requirements. This rule contains general requirements, definitions, and a requirement that an applicant submit an application for an authority to construct and permit to operate.

Rule 2 - New Source Review. This rule applies to all new and modified sources. The following sections of Rule 2 are the regulations that are applicable to this project.

- *Section 2-2-301 - Best Available Control Technology (BACT) Requirement:* This rule requires that BACT be applied for each pollutant that is emitted in excess of 10 pounds per day.
- *Section 2-2-302 - Offset Requirement, Precursor Organic Compounds and Nitrogen Oxides:* This rule requires that for new or modified projects with an emissions increase of 50 tons per year or more of POCs and/or NOx, offsets shall be provided at a ratio of 1.15 tons of emission reduction credits for each ton of proposed project permitted emissions. For facilities emitting more than 15 but less than 50 tons per year of POCs and/or NOx, offsets, which can be provided by the District from the Small Facility Banking account, are required at a ratio of 1.0 to 1.0.
- *Section 2-2-303 - Offset Requirements, Particulate Matter (TSP), PM10 and Sulfur Dioxide:* If a Major Facility (a project that emits any pollutant greater than 100 tons per year) has a cumulative increase of 1.0 ton per year of PM10 or SO2, emission offsets must be provided for the entire cumulative increase at a ratio of 1.0:1.0.

Emission reductions of nitrogen oxides and/or sulfur dioxide may be used to offset increased emissions of PM10 at offset ratios deemed appropriate by the Air Pollution Control Officer.

A facility that emits less than 100 tons of any pollutant may voluntarily provide emission offsets for all, or any portion, of their PM10 or sulfur dioxide emissions increase at the offset ratio required above (1.0:1.0).

- *Section 2-2-606 - Emission Calculation Procedures, Offsets.* This section requires that emission offsets must be provided from the District's Emissions Bank, and/or from contemporaneous actual emission reductions.

Rule 7 - Acid Rain. This rule applies the requirements of Title IV of the federal Clean Air Act, which are spelled out in Title 40, Code of Federal Regulations, Part 72. The provisions of Part 72 will apply when EPA approves the District's Title IV program, which has not been approved at this time. The Title IV requirements will include the installation of continuous emission monitors to monitor acid deposition precursor pollutants.

## **REGULATION 6**

Regulation 6 - Particulate Matter and Visible Emission. The purpose of this regulation is to limit the quantity of particulate matter in the atmosphere. The following two sections of Regulation 6 are directly applicable to this project:

- *Section 301 - Ringelmann No. 1 Limitation:* This rule limits visible emissions to no darker than Ringelmann No. 1 for periods greater than three minutes in any hour.
- *Section 310 - Particulate Weight Limitation:* This rule limits source particulate matter emissions to no greater than 0.15 grains per standard dry cubic foot.

## **REGULATION 9**

Rule 1 - Limitations

- *Section 301: Limitations on Ground Level Sulfur Dioxide Concentration.* This section requires that emissions of sulfur dioxide shall not impact at ground level in excess of 0.5 ppm for 3 consecutive minutes, or 0.25 ppm averaged over 60 minutes, or 0.05 ppm averaged over 24 hours.
- *Section 302: General Emission Limitation.* This rule limits the sulfur dioxide concentration from an exhaust stack to no greater than 300 ppm dry.

Rule 9 - Nitrogen Oxides from Stationary Gas Turbines. This rule limits gaseous fired, SCR equipped, combustion turbines rated greater than 10 MW to 9 ppm at 15%O<sub>2</sub>.

## **REGULATION 10**

Rule 26 - Gas Turbines - Standards of Performance for New Stationary Sources. This rule adopts the national maximum emission limits (40 CFR, Part 60) which are 75 ppm NO<sub>x</sub> and 150 ppm SO<sub>2</sub> at 15 percent O<sub>2</sub>. Whenever any source is subject to more than one emission limitation rule, regulation, provision or requirement relating to the control of any air contaminant, the most stringent limitation applies.

## **SETTING**

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### **METEOROLOGY AND CLIMATE**

A presentation of meteorological and climatological characteristics of the region can be found in Section 5.2 of the AFC, which is based on the Bay Area Air Quality Management District's (District) publication entitled "Climate, Physiography, and Air Pollution Potential – Bay Area and its Subregions" (District 1999a).

The UGGPP would be located within the area of the San Francisco International Airport (SFIA), adjacent to the United Airline Maintenance Center and the existing United Cogeneration Inc. (UCI). UCI is a 30 MW gas-fired power generation facility, owned and operated by United Airlines. Phase 1 of UGGPP will occupy less than two acres of the existing United Airline Maintenance Center parking lot.

The SFIA is on flat, filled tideland on the western shore of the San Francisco Bay. San Bruno Mountain, five miles to the north-northwest, rises to 1,300 feet. A north-south trending ridge of coastal mountains, four miles to the west, varies in elevation from 700 to 1,900 feet, being highest southward along the peninsula. The Pacific Ocean, west of the ridge, is six miles from the airport. A broad gap to the northwest of the site, between San Bruno Mountain and the coastal mountains, allows a strong flow of marine air over the airport and dominates the local climate. The nearest communities include South San Francisco to the north, and San Bruno to the northwest and west.

The project area is on the northeast side of the Peninsula region of the Bay Area. This area is characterized by prevailing winds predominantly northwesterly and southeasterly during the winter; and northwesterly, stronger winds during the spring, summer and fall. On the peninsula, there are two important gaps in the Coast Range. The larger of the two is the San Bruno Gap, extending from Ft Funston on the ocean side to the San Francisco Airport (the project site) on the bay side. Because the gap is oriented in the same northwest to southeast direction as the prevailing winds, and because the elevations along the gap are below 200 feet, marine air is easily able to penetrate into the bay, making its climate cool and windy. The speed of these winds is generally sufficient to provide a favorable condition for the dispersion of pollutants during most of the year. The average annual wind speed is approximately nine miles per hour. Calm wind conditions occur an average of 5.22 percent of the time annually and an average of 2.75 percent during the summertime.

Temperature and precipitation data, collected at the San Francisco Weather Service Office-Airport Station, show that average summer temperatures (°F) range from average lows of mid-50s to average highs of low to mid-70s. In winter, the average lows are in the mid-40s and the average highs are in the mid-50s. Annual precipitation in the project area is an average of 20 inches, more than 80 percent of which occurs between November and March. Very little precipitation occurs during the summer months (less than 0.1 inch average between June and September) due to the strong high-pressure system that blocks migrating storm systems.

## **EXISTING AMBIENT AIR QUALITY**

The Environmental Protection Agency (EPA) and the California Air Resources Board (CARB) both required the establishment of allowable maximum ambient concentrations of air pollutants, called ambient air quality standards (AAQS). The state AAQS, established by CARB, are typically more restrictive than the federal AAQS, which are established by the EPA. The state and federal air quality standards are listed in **AIR QUALITY Table 1**. As indicated in Table 1, the averaging times for the various air quality standards (the duration over which they

are measured) range from one-hour to an annual basis. The standards are read as a concentration, in parts per million (ppm), or as a weighted mass of material per a volume of air, in milligrams or micrograms of pollutant per cubic meter of air (mg/m<sup>3</sup> and µg/m<sup>3</sup>, respectively).

In general, an area is designated as attainment for a specific pollutant if the concentrations of that air contaminant do not exceed the standard. Likewise, an area is designated as non-attainment for an air contaminant if that standard is violated. Where not enough ambient data are available to support designation as either attainment or non-attainment, the area can be designated as unclassified. Unclassified areas are normally treated the same as attainment areas for regulatory purposes. An area can be attainment for one air contaminant while non-attainment for another, or attainment for the federal standard and non-attainment for the state standard for the same contaminant. The entire area within the boundaries of a district is usually evaluated to determine the district's attainment status.

**AIR QUALITY Table 1**  
**Federal and State Ambient Air Quality Standards**

<b>Pollutant</b>	<b>Averaging Time</b>	<b>Federal Standard</b>	<b>California Standard</b>
Ozone (O <sub>3</sub> )	1 Hour	0.12 ppm (235 µg/m <sup>3</sup> )	0.09 ppm (180 µg/m <sup>3</sup> )
	8 Hour	0.08 ppm (160 µg/m <sup>3</sup> )	—
Carbon Monoxide (CO)	8 Hour	9 ppm (10 mg/m <sup>3</sup> )	9 ppm (10 mg/m <sup>3</sup> )
	1 Hour	35 ppm (40 mg/m <sup>3</sup> )	20 ppm (23 mg/m <sup>3</sup> )
Nitrogen Dioxide (NO <sub>2</sub> )	Annual Average	0.053 ppm (100 µg/m <sup>3</sup> )	—
	1 Hour	—	0.25 ppm (470 µg/m <sup>3</sup> )
Sulfur Dioxide (SO <sub>2</sub> )	Annual Average	0.03 ppm (80 µg/m <sup>3</sup> )	—
	24 Hour	0.14 ppm (365 µg/m <sup>3</sup> )	0.04 ppm (105 µg/m <sup>3</sup> )
	3 Hour	0.5 ppm (1300 µg/m <sup>3</sup> )	—
	1 Hour	—	0.25 ppm (655 µg/m <sup>3</sup> )
Respirable Particulate Matter (PM <sub>10</sub> )	Annual Geometric Mean	—	30 µg/m <sup>3</sup>
	24 Hour	150 µg/m <sup>3</sup>	50 µg/m <sup>3</sup>
	Annual Arithmetic Mean	50 µg/m <sup>3</sup>	—
Sulfates ((SO <sub>4</sub> ) <sub>2</sub> -)	24 Hour	—	25 µg/m <sup>3</sup>
Lead	30 Day Average	—	1.5 µg/m <sup>3</sup>
	Calendar Quarter	1.5 µg/m <sup>3</sup>	—
Hydrogen Sulfide (H <sub>2</sub> S)	1 Hour	—	0.03 ppm (42 µg/m <sup>3</sup> )
Vinyl Chloride (chloroethene)	24 Hour	—	0.010 ppm (26 µg/m <sup>3</sup> )
Visibility Reducing Particulates	1 Observation	—	In sufficient amount to produce an extinction coefficient of 0.23 per kilometer due to particles when the relative humidity is less than 70 percent.

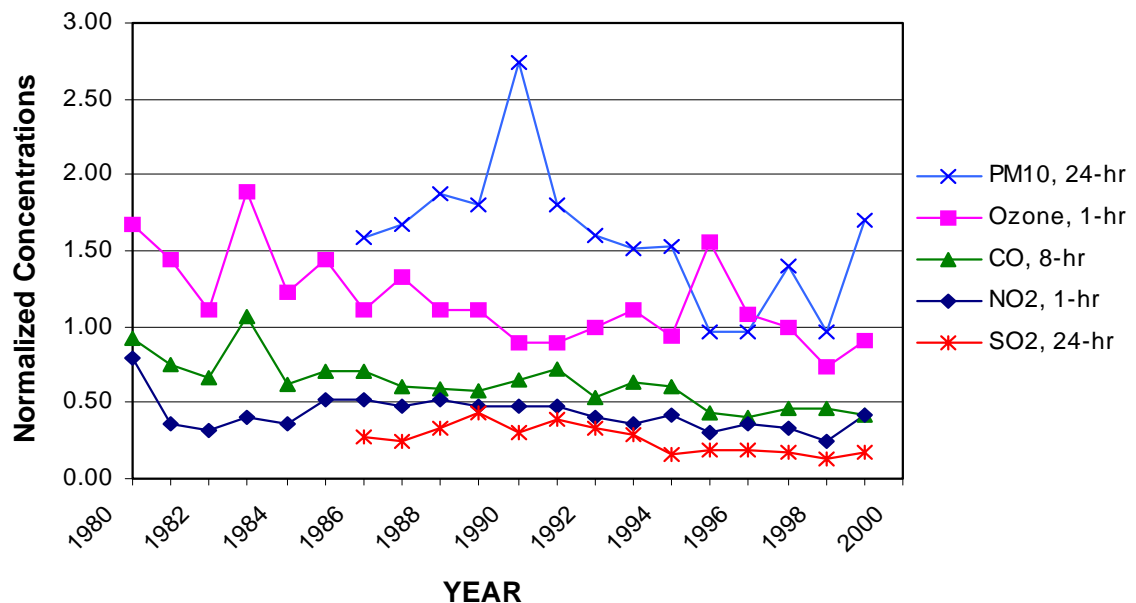
**AIR QUALITY Table 2** and **AIR QUALITY Figure 1** summarize the historical air quality data for the project location, recorded at the San Mateo County, Redwood City air monitoring station for ozone, PM10, NOx and CO, and at San Francisco, Arkansas Street Station for SO2. **AIR QUALITY Table 2** provides the concentration of each pollutant, the averaging time over which the concentration is measured and, where applicable, the number of days of each year (from 1994 to 1999) in which the CAAQS or NAAQS was violated. In 1998 the United States Environmental Protection Agency (EPA) reclassified the Bay Area as nonattainment for ozone based on violations of the NAAQS ozone standard at several locations in the air basin.

**AIR QUALITY Table 2**  
**Ambient Air Quality Monitoring Data**  
**Redwood City, unless otherwise stated**

Pollutant		1994	1995	1996	1997	1998	1999	Most Restrictive Ambient Air Quality Standard
Ozone	Maximum 1-hr Average (ppm)	0.08	0.14	0.10	0.09	0.07	0.08	0.09 (CAAQS)
	# of days with violation of CAAQS	0	5	1	0	0	0	—
	Maximum 8-hr Average (ppm)	0.07	0.10	0.07	0.07	0.05	0.06	0.08 (NAAQS)
	# of days with violation of NAAQS	0	2	0	0	0	0	—
PM10	Maximum 24-hr Average (µg/m3)	76.2	48.4	48.2	69.8	48.6	84.8	50.0 (CAAQS)
	# of days calculated with violation of CAAQS	36	0	0	12	0	15	—
	Annual Geometric Mean (µg/m3)	21.9	18.6	19.1	22.3	20.7	22.3	30 (CAAQS)
	Annual Arithmetic Mean (µg/m3)	24.8	21.0	21.1	23.9	22.4	24.5	50 (NAAQS)
NO2	Maximum 1-hr Average (ppm)	0.11	0.08	0.09	0.08	0.06	0.10	0.25 (CAAQS)
	Average annual conc. (ppm)	0.021	0.019	0.020	0.018	0.018	0.019	0.053 (NAAQS)
CO	Maximum 1-hr Average (ppm)	12.0	10.1	8.6	10.7	8.7	8.0	20.0 (CAAQS)
	Maximum 8-hr Average (ppm)	5.4	3.9	3.6	4.2	4.1	3.8	9.0 (CAAQS)
SO2 (a)	Maximum 1-hr Average (ppm)	0.02	0.04	0.04	0.03	0.04	0.03	0.25 (CAAQS)
	Maximum 3-hr Average (ppm)	0.009	0.022	0.020	0.022	0.020	0.020	0.5 (NAAQS)
	Maximum 24-hr Average (ppm)	0.006	0.007	0.008	0.007	0.005	0.007	0.04 (CAAQS)
	Annual Average (ppm)	0.001	0.001	0.001	0.001	0.001	0.002	0.03 (NAAQS)
(a) Data from San Francisco – Arkansas St. Monitoring Station Source: (CARB 2000a)								

In **AIR QUALITY Figure 1**, the short term normalized concentrations are provided from 1980 to 1999 for NO<sub>2</sub>, ozone and CO; and from 1986 to 1999 for PM<sub>10</sub> and SO<sub>2</sub>. Normalized concentrations represent the ratio of the highest measured concentrations in a given year to the most stringent applicable national or state ambient air quality standard. Therefore, normalized concentrations lower than one indicate that the measured concentrations were lower than the most stringent ambient air quality standard.

**AIR QUALITY Figure 1**  
**Normalized Maximum Short-Term Historical Air Pollutant Concentrations:**  
**1980-1999. San Mateo – Redwood City, unless otherwise stated**



A Normalized Concentration is the ratio of the highest measured concentration to the applicable most stringent air quality standard. For example, in 1997 the highest 24-hour average PM<sub>10</sub> concentration measured in Redwood City was 69.8 µg/m<sup>3</sup>. Since the most stringent ambient air quality standard is 50 µg/m<sup>3</sup>, the 1997 normalized concentration is 69.8/50 = 1.40.

The SO<sub>2</sub> data are from San Francisco, Arkansas St. monitoring station, the closest station to the project area that records SO<sub>2</sub> concentrations.

Source: (CARB 1999a).

Following is a more in-depth discussion of ambient air quality conditions in the San Mateo area for O<sub>3</sub>, CO, NO<sub>2</sub>, and PM<sub>10</sub>.

## OZONE

In the presence of the ultraviolet radiation, both NO<sub>x</sub> and POC go through a number of complex chemical reactions to form ozone. **AIR QUALITY Table 3** summarizes the best representative ambient ozone data collected from two different monitoring stations close to the project site. The table includes the maximum hourly concentration and the number of days above the State standards. As indicated in this table, ozone formation is higher in the summer and lower in the winter. The San Francisco Bay Air Basin is classified as a nonattainment area for ozone because it

violates California Ambient Air Quality Standards (CAAQS) and recently, as discussed above, the National Ambient Air Quality Standards (NAAQS).

**AIR QUALITY Table 3**  
**Ozone Air Quality Summary, 1991-1999**

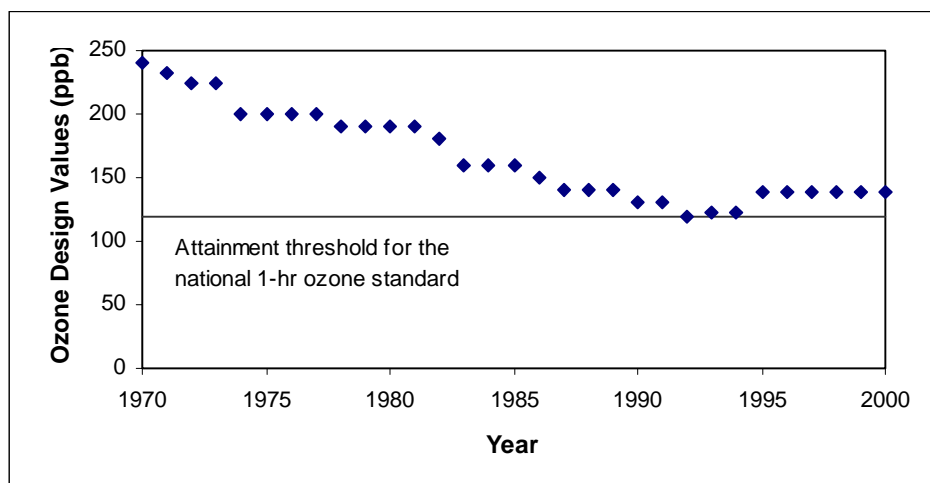
Year	Redwood City			San Francisco Arkansas St		
	Maximum 1-hr Average (ppm)	Days Above State Standard	Month Violations Occurred	Maximum 1-hr Average (ppm)	Days Above State Standard	Month Violations Occurred
1991	0.080	0	--	0.050	0	--
1992	0.090	0	--	0.080	0	--
1993	0.100	1	Jl	0.080	0	--
1994	0.084	0	--	0.055	0	--
1995	0.140	5	Ju, Jl, Au	0.088	0	--
1996	0.097	1	May	0.071	0	--
1997	0.090	0	--	0.068	0	--
1998	0.066	0	--	0.053	0	--
1999	0.082	0	--	0.079	0	--
California Ambient Air Quality Standard: 0.09 ppm National Ambient Air Quality Standard: 0.12 ppm Month abbreviations: Ju-June, Jl-July, Au-August, Source: (CARB 2000a)						

Ozone formation is influenced significantly by year-to-year changes in atmospheric conditions. For this reason, a long-term trend in ambient ozone levels is needed to understand whether or not a region is experiencing reductions in its ambient ozone concentrations. As shown in **AIR QUALITY Figure 2**, the long-term statistics of ozone levels in the San Francisco Bay Area region shows that this region has made significant strides toward attainment of the previous federal ozone one-hour standard. However, the Bay Area is still in violation of the State and Federal ozone standards.

The reasons for the recent violations of the federal ozone standard shown in the **AIR QUALITY Figure 2** are not known. However, one important characteristic of the last few years is that more exceedances have been observed during weekends, when NO<sub>x</sub> emissions are expected to go down by 30 percent, and POC emissions would only be reduced by 10 percent from the emission levels expected during weekdays. The "weekend effect", modeling analyses, and other corroborative analyses suggest that the air basin may be POC limited. This means that any reductions in NO<sub>x</sub> emissions may be counterproductive unless accompanied by reductions in POC emissions. The District has developed its State Implementation Plan (SIP) in which the strategy to bring the air basin back to attainment of the national 1-hour standard is identified (District 1999b).



**AIR QUALITY Figure 2**  
**District Ozone Design Value 1970-2000**



Each design value represents the fourth highest concentration recorded in the air basin during the previous three years. For example in 1982 some site's 4th highest value for 1980-1982 was 180 ppb. Design values are used to determine attainment status. Source: District

## ***CARBON MONOXIDE (CO)***

As **AIR QUALITY Table 2** shows, the maximum one-hour and eight-hour CO concentrations are significantly less than the California Ambient Air Quality Standards. CO is considered a local pollutant as it is found in high concentrations only near the source of emission. Automobiles and mobile sources are the principal source of the CO emissions. High levels of CO emissions can also be generated from fireplaces and wood-burning stoves. Industrial sources, typically constitute less than 10 percent of the ambient CO levels in the Bay Area. According to the data recorded in different monitoring stations, there have been no violations of California Ambient Air Quality Standards or National Ambient Air Quality Standards since 1990 for the one-hour or the eight-hour CO standards in San Mateo County and the San Francisco area (see **AIR QUALITY Table 4**).

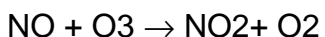
The highest concentrations of CO occur when low wind speeds and a stable atmosphere trap the pollution emitted at or near ground level in what is known as the stable boundary layer. These conditions occur frequently in the wintertime late in the afternoon, persist during the night and may extend one or two hours after sunrise. Since the mobile sector (cars, trucks, busses) is the main source of CO, we expect ambient concentrations of CO to be highly dependent on emissions from the mobile sector. In fact, the peak CO concentrations occur during the rush hour traffic in the morning and afternoon. Carbon monoxide concentrations in San Mateo County and the rest of the state have declined significantly due to two state-wide programs: 1) the 1992 wintertime oxygenated gasoline program, and 2) Phases I and II of the reformulated gasoline program. New vehicles with oxygen sensors and fuel injection systems have also contributed to the decline in CO levels in the state. Today, all the counties in California, with the sole exception of Los Angeles County, are in compliance with the CO ambient air quality standards.

**AIR QUALITY Table 4**  
**CO Air Quality Summary, 1991-1999**

Year	Redwood City		San Francisco Arkansas St	
	Maximum 1-hr Average (ppm)	Maximum 8-hr Average (ppm)	Maximum 1-hr Average (ppm)	Maximum 8-hr Average (ppm)
1991	11.0	6.50	9.0	6.50
1992	12.0	4.75	8.0	6.38
1993	10.0	5.75	7.0	5.13
1994	12.0	5.41	5.8	4.40
1995	10.1	3.91	5.3	4.44
1996	8.6	3.60	5.4	3.80
1997	10.7	4.18	4.8	3.45
1998	8.7	4.09	7.1	3.96
1999	8.0	3.80	5.4	3.68
California Ambient Air Quality Standard: 1-hr, 20 ppm; 8-hr, 9 ppm National Ambient Air Quality Standard: 1-hr, 35 ppm; 8-hr, 9 ppm Source: (CARB 1999a, CARB 2000a)				

## ***NITROGEN DIOXIDE (NO<sub>2</sub>)***

As shown in **AIR QUALITY Table 5** the maximum one-hour and annual concentrations of NO<sub>2</sub> in San Mateo County and San Francisco are significantly less than California Ambient Air Quality Standards. Approximately 90 percent of the NO<sub>x</sub> emitted from combustion sources is NO, while the balance is NO<sub>2</sub>. NO is oxidized in the atmosphere to NO<sub>2</sub> but some level of photochemical activity is needed for this conversion. This is why the highest concentrations of NO<sub>2</sub> occur during the fall and not in the winter when atmospheric conditions favor the trapping of ground level releases but lack significant photochemical activity (less sun light). In the summer the conversion rates of NO to NO<sub>2</sub> are high but the relatively high temperatures and windy conditions (atmospheric unstable conditions) disperse pollutants, preventing the accumulation of NO<sub>2</sub> to levels approaching the one-hour ambient air quality standard. The formation of NO<sub>2</sub> in the summer with the help of the ozone is according to the following reaction.



In urban areas, ozone concentration level is typically high. That level will drop substantially at night as the above reaction takes place between ozone and NO. This reaction explains why, in urban areas, ozone concentrations at ground level drop, while aloft and in downwind rural areas (without sources of fresh NO<sub>x</sub> emissions) ozone concentrations can remain relatively high.

**AIR QUALITY Table 5**  
**NO2 Air Quality Summary, 1991-1999**

Year	Redwood City		San Francisco Arkansas St	
	Maximum 1-hr Average (ppm)	Maximum Annual Average (ppm)	Maximum 1-hr Average (ppm)	Maximum Annual Average (ppm)
1991	0.120	0.023	0.100	0.024
1992	0.100	0.021	0.090	0.022
1993	0.090	0.022	0.080	0.024
1994	0.106	0.021	0.091	0.022
1995	0.077	0.019	0.088	0.021
1996	0.090	0.020	0.081	0.021
1997	0.064	0.018	0.067	0.020
1998	0.063	0.018	0.080	0.020
1999	0.104	0.019	0.103	0.021
California Hourly Ambient Air Quality Standard: 0.250 ppm National Annual Ambient Air Quality Standard: 0.053 ppm Source: (CARB 2000a)				

### ***INHALABLE PARTICULATE MATTER (PM10)***

As **AIR QUALITY Table 6** indicates, the project area also annually experiences a number of violations of the state 24-hour PM10 standard. The violations of the state 24-hour standard occur predominately between the months of October and February, with the highest number of violations occurring from November through January.

PM10 can be emitted directly or it can be formed many miles downwind from emission sources when various precursor pollutants interact in the atmosphere. Gaseous emissions of pollutants like NOx, SOx and POC from turbines, and ammonia from NOx control equipment, given the right meteorological conditions, can form particulate matters in the form of nitrates (NO3), sulfates (SO4), and organic particles. These pollutants are known as secondary particulates, because they are not directly emitted but are formed through complex chemical reactions in the atmosphere.

PM nitrate (mainly ammonium nitrate) is formed in the atmosphere from the reaction of nitric acid and ammonia. Nitric acid in turn originates from NOx emissions from combustion sources. The nitrate ion concentrations during the wintertime are a significant portion of the total PM10, and should be even a higher contributor to particulate matter of less than 2.5 microns (PM2.5). The nitrate ion is only a portion of the PM nitrate, which can be in the form of ammonium nitrate (ammonium plus nitrate ions) and some as sodium nitrate. If the ammonium and the sodium ions associated with the nitrate ion are taken into consideration, a much higher estimate of PM nitrate contributions to the total PM can be inferred than the values included in the table.

The air agencies in California are now deploying PM2.5 ambient air quality monitors throughout the state. PM2.5 ambient air quality attainment plans, if needed, are due

to the U.S. EPA by 2005. As with PM<sub>10</sub>, information from existing PM<sub>2.5</sub> research monitors in California indicates that there have been significant reductions in ambient PM<sub>2.5</sub> concentrations in the state (Watson 1998) and that the San Francisco Bay Air Basin may be in attainment of the new PM<sub>2.5</sub> standards.

The highest PM concentrations are measured in the winter. During wintertime high PM episodes, the contribution of ground level releases to ambient PM concentrations is disproportionately high. The contribution of wood-smoke particles to the PM<sub>2.5</sub> concentrations may be even higher, considering that most of the wood-smoke particles are smaller than 2.5 microns

**AIR QUALITY Table 6**  
**PM<sub>10</sub> Air Quality Summary, 1991-1999**  
**Maximum 24-hr Average Concentration (µg/m<sup>3</sup>)**

Year	Redwood City			San Francisco Arkansas St.		
	Maximum 1-hr Average (µg/m <sup>3</sup> )	Days Above State Standard (calculated*)	Month Violations Occurred	Maximum 1-hr Average (µg/m <sup>3</sup> )	Days Above State Standard (calculated*)	Month Violations Occurred
1991	90.0	69	J, N, D	109.0	90	J, O, D
1992	80.0	42	J, N, D	81.0	54	J, N
1993	76.0	30	O, N, D	69.0	30	N, D
1994	76.2	36	J, F, D	93.0	36	J, F, D
1995	48.4	0	--	49.9	0	--
1996	48.2	0	--	70.9	12	F
1997	69.8	12	J, D	81.0	18	J, D
1998	48.6	0	--	52.4	6	N
1999	84.8	15	J, O, D	77.9	36	Ju, Jl, O, D
California Ambient Air Quality Standard: 0.09 ppm National Ambient Air Quality Standard: 0.12 ppm Month abbreviations: J-January, F-February, Ju-June, Jl-July, O-October, N-November, D-December Source: (CARB 2000a) * The figures in these columns represent the potential number of violations. PM <sub>10</sub> is monitored approximately once every six days, so the potential number of violations-days are calculated by the actual number of violations multiplied by six.						

## ***SULFUR DIOXIDE (SO<sub>2</sub>)***

Sulfur dioxide is typically emitted as a result of the combustion of a fuel containing sulfur. Fuels such as natural gas contain very little sulfur and consequently have very low SO<sub>2</sub> emissions when combusted. By contrast fuels high in sulfur content such as lignite (a type of coal) emit very large amounts of SO<sub>2</sub> when combusted. Sources of SO<sub>2</sub> emissions within the San Francisco Bay Area Air District come from every economic sector and include a wide variety of fuels, gaseous, liquid and solid. The San Francisco Bay Air Basin is designated attainment for all the SO<sub>2</sub> state and federal ambient air quality standards. The closest SO<sub>2</sub> monitoring station to the project site is in San Francisco, Arkansas Street. **AIR QUALITY Table 7** shows the historic 1-hour, 24-hour and annual average SO<sub>2</sub> concentrations measured at the San Francisco Arkansas Street monitoring station. As **AIR QUALITY Table 7** and

**AIR QUALITY Figure 1** show, concentrations of SO<sub>2</sub> are far below the state and federal SO<sub>2</sub> ambient air quality standards.

**AIR QUALITY Table 7**  
**SO<sub>2</sub> Air Quality Summary, 1991-1999**

Year	San Francisco Arkansas St		
	Maximum 1-hr Average (ppm)	Maximum 24-hr Average (ppm)	Maximum Annual Average (ppm)
1991	0.040	0.016	0.0016
1992	0.040	0.013	0.0016
1993	0.040	0.011	0.0010
1994	0.017	0.006	0.0008
1995	0.044	0.007	0.0013
1996	0.036	0.008	0.0012
1997	0.026	0.007	0.0014
1998	0.036	0.005	0.0012
1999	0.028	0.007	0.0020
California Hourly Ambient Air Quality Standard: 0.250 ppm California 24-hr Ambient Air Quality Standard: 0.040 ppm National Annual Ambient Air Quality Standard: 0.030 ppm Source: (CARB 1999a, CARB 2000a)			

## PROJECT DESCRIPTION

This section describes the project design and criteria pollutant control devices as described in the UGGPP AFC (El Paso 2000a), and data request responses (El Paso 2000d).

## PROPOSED EQUIPMENT

The major equipment proposed in the application include the following:

- One General Electric (GE) LM 6000 combustion turbine generator (CTG), simple cycle, with a nominal output of 48 MW; utilizing water injection and Selective Catalytic Reduction (SCR) for oxides of nitrogen (NO<sub>x</sub>) control, and an oxidation catalyst for Carbon Monoxide (CO) and Precursor Organic Compounds (POC) control.
- Ancillary equipment including a gas compressor, a 115 kV electrical switchyard, an ammonia injection system, a mobile water treatment system, and a control trailer.
- A continuous emission monitoring (CEM) system.

## FACILITY OPERATION

The combustion turbine generator (CTG), nominally rated at 48 MW with a maximum rating of 51 MW, will be operated simple cycle, without the need for duct firing, heat recovery or cooling towers. The UGGPP is a peaking power plant and will be operated in accordance with the California Independent System Operator

(ISO) requirements. This project will be limited to a maximum of 4,000 hours per year of operation for a period of three years. This project is expected to operate seasonally, with the majority of its operation occurring during the summer power demand peak. However, this plant will be permitted to operate anytime during the year. The CTG will burn only natural gas; there are no provisions for any other fuel as a back up.

## ***EMISSION CONTROLS***

The combustion turbine generator (CTG) will be equipped with a water injection system to control NO<sub>x</sub> emissions. After combustion of the natural gas in the CTG, the exhaust flue gases will pass through the SCR and oxidation catalyst systems to reduce NO<sub>x</sub>, CO and POC emissions. A selective catalytic reduction (SCR) system that will use ammonia vapor in the presence of a catalyst will reduce NO<sub>x</sub> concentrations to 3.0 ppmvd (@ 15% O<sub>2</sub>) in the exhaust gas. An oxidation catalyst will reduce CO and POC concentrations to no more than 6.0 ppmvd and 2.0 ppmvd, respectively (@ 15% O<sub>2</sub>). Additionally, continuous emission monitors (CEMs) are proposed to be installed on the exhaust stack to monitor NO<sub>x</sub>, CO and oxygen concentrations to assure adherence with the proposed emission limits. The CEM system will generate reports of emissions data in accordance with permit requirements and will send alarm signals to the plant's control room when the level of emissions approaches or exceeds pre-selected limits.

The exclusive use of pipeline-quality natural gas, a relatively clean-burning fuel, will limit the formation of PM<sub>10</sub> and SO<sub>2</sub> emissions. Natural gas contains very little noncombustible gas or solid residues and a small amount of reduced sulfur compounds including mercaptan, thus resulting in relatively low emissions of the above mentioned pollutants.

## **ESTIMATED PROJECT EMISSIONS**

The proposed project will generate air emissions during the construction and operation of the facility. The following is a summary of the air emissions from these sources:

### ***CRITERIA POLLUTANTS GENERATED FROM CONSTRUCTION ACTIVITIES***

The UGGPP will include a 115-kilovolt switchyard. Transmission line interconnections will be performed using the existing transmission line from United Cogeneration Inc. (UCI) to the PG&E grid along North Access Road. The existing UCI water system, SFIA potable water system and SFIA sanitary waste system will be used for the project's water and wastewater needs. Natural gas will be piped to the site from the existing pipeline located near South Airport Road. Therefore, no new linear facilities will require construction for this project.

The proposed project construction schedule will extend over approximately 5 months, based on a 12 hours per day, seven days per week construction schedule (7 am to 7pm daily). During the construction period, air emissions will be generated from the exhaust of the heavy equipment such as bulldozers, excavators, cranes, compressors, paving equipment, and from fugitive dust generated from activities such as clearing, grading and preparation of the site. **AIR QUALITY Table 8**

summarizes the different levels of criteria pollutants that will be generated from the construction activities at the UGGPP site (El Paso 2000d, Appendix M-2 revised).

**AIR QUALITY: Table 8**  
**Estimated Construction Emissions from the UGGPP**  
**(Maximum Hourly Emission and Total Tons)**

	NOx		CO		POC		SO2		PM10	
	lbs/hr	tons	Lbs/hr	tons	Lbs/hr	tons	Lbs/hr	tons	lbs/hr	tons
Construction Vehicles	8.6	4.5	14.8	9.5	1.3	0.9	0.2	0.1	0.7	0.4
Soil Preparation/Construction	--	--	--	--	--	--	--	--	1.2	0.3

The construction vehicle emissions provided above were based on the California Motor Vehicle Emission Inventory emission factors (CARB 2000b) and EPA's Exhaust Emission Factors for Nonroad Engine Modeling emission factors (EPA 1998), the estimated number of operational hours for each piece of equipment throughout project construction, and for non-road equipment the estimated equipment load factor (SCAQMD 1993).

The uncontrolled Soil Preparation/Construction (i.e. fugitive dust) emission estimates were based on emission factors and calculations provided in EPA's AP-42 Section 13.2.2.2 and 11.9 (EPA 2000), and the earthmoving and road travel activity estimates developed for the project's construction. The controlled Soil Preparation/Construction emission estimates assume a 50% control efficiency due to water application or equivalent dust suppression measures.

### ***CRITERIA POLLUTANTS GENERATED FROM PROJECT OPERATION***

Air emissions will be generated from operating the major project components. **AIR QUALITY Tables 9 and 10** summarize the maximum (worst-case) estimated levels of the different criteria pollutants associated with project operation. The assumptions used in calculating the air emissions in the table include:

- manufacturer guaranteed emission factors,
- the facility operating 24 hours per day, 4,000 hours per year,
- a maximum of 125 start-up/shutdowns per year, which assume the following:
  - a. a 10 minute start-up/shutdown period
  - b. start-up/shutdown emissions are calculated as hourly emission with the 10 minutes of start-up/shutdown emissions being added to 50 minutes of base load emissions.
  - c. the start-up/shutdown emissions estimate provided by the turbine vendor, General Electric/S&S Energy Products, (EMPE 2000d, Appendix M-10) are based on the assumed average ambient condition of 59°F.
- turbine maximum daily and maximum annual emissions based on the turbine operating at 100% load and a worst-case ambient temperature of 40°F, and:

- a. one startup/shutdown event per day (i.e. 1 hour/day of start-up/shutdown) and 125 start-up/shutdowns events per year (i.e. 125 hours/year of start-up/shutdown).
- b. 3,875 hours of base load turbine operation.

The proposed project's hourly emission of criteria air pollutants are shown in **AIR QUALITY Table 9**. As this Table shows, the highest NO<sub>x</sub> emissions occur during startup/shutdown. These higher emissions occur because the turbine emission control devices are designed for maximum efficiency during full load steady state operation.

**AIR QUALITY: Table 9**  
**Project Hourly Emissions**  
**(pounds per hour, lb/hr)**

Operational Profile	NO <sub>x</sub>	CO	POC	SO <sub>x</sub> (a)	PM10 (a)
Start-up/Shutdown @ 59°F (b)	7.7	7.7	0.68	1.30	3.14
CTG Steady State @100% load at 40°F	6.5	7.9	1.0	1.34	3.14
CTG Steady State @100% load at 59°F	6.3	7.7	0.7	1.30	3.05
CTG Steady State @100% load at 95°F	6.0	7.3	0.5	1.24	2.90
CTG Steady State @75% load at 40°F	5.0	6.1	0.9	1.04	2.42
CTG Steady State @75% load at 59°F	4.8	5.7	0.4	1.01	2.37
CTG Steady State @75% load at 95°F	4.7	5.6	0.4	0.97	2.28
CTG Steady State @50% load at 40°F	3.8	4.5	0.6	0.79	1.84
CTG Steady State @50% load at 59°F	3.8	4.5	0.3	0.77	1.80
CTG Steady State @50% load at 95°F	3.6	4.3	0.3	0.75	1.76

- (a) Emissions of PM10 and SO<sub>2</sub> are a function of quantity of fuel burned, thus they will be highest when the turbine operates at maximum fuel consumption.
- (b) A start-up shutdown event is estimated to be completed in 10 minutes; however, for simplification the emissions for a start-up/shutdown event are calculated as hourly emissions with the 10 minute start-up emissions being added to 50 minutes of base load operating emissions.

**AIR QUALITY Table 10** summarizes the maximum (worst case) daily and annual estimated criteria pollutants emissions from the project, using the assumptions provided above. Turbine annual emissions are estimated based on the 100% load at 40°F operating mode, including start-up/shutdown emissions.



**AIR QUALITY: Table 10**  
**Estimated Maximum Emissions from the UGGPP Project**

Pollutant	NO x	CO	POC	SOx	PM10
Project Total Daily Emissions (Lb/day) (a)	157.2	189.4	23.7	31.2	74.4
Project Total Annual Emissions (Ton/year) (b)	13.1	15.8	2.0	2.6	6.2

(a) Assumes one startup/shutdown event/hour per day.

(b) Assumes 125 startup/shutdown events/hours per year and 3,875 hours of base load operation.

Additionally, the project's ammonia slip emissions from the SCR control system, which will be limited to a concentration of 10 ppm, are estimated to be 6.0 lbs/hr, 144 lbs/day and 12 tons/year.

## INITIAL COMMISSIONING

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The initial commissioning of a power plant refers to the time frame between the completion of the construction and the consistent production of electricity for sale on the market. For most power plants operating emission limits usually do not apply during the initial commissioning procedures. Normally, during the initial testing during commissioning the post-combustion control systems (i.e., the SCR and oxidation catalyst) are not operational. However, the simple cycle UGGPP turbine does not require the initial commissioning tests that are required for combined cycle power plants, and the SCR and oxidation catalysts will be operational upon initial turbine operation. Therefore, the no additional emissions are expected from the initial commissioning activities of the UGGPP.

Condition of Certification **AQ-C5** requires that the UGGPP operate its post combustion control system at all times, including during the initial commissioning period.

## FACILITY CLOSURE

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The certification for this power plant, if granted, will be limited to a period of three years. As a condition of the four-month AFC process this simple cycle combustion turbine will either close and be removed from the site, or be converted to a combined cycle unit within three years of being certified.

If the UGGPP project is not to be converted to a more efficient combined cycle plant then it must be removed within three years of certification. If the turbine is to be converted to a combined cycle unit then a new AFC must be filed with the CEC. That new project must undergo a new certification process and be certified in time for the turbine to be converted to a combined cycle power unit prior to the end of the three year simple cycle certification period. Alternatively, the turbine will have to

shutdown until such time when it is both certified and ready to operate as a combined cycle unit.

## **COMPLIANCE WITH LORS**

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### **FEDERAL**

The District's NSR permit process, which generated the Preliminary Determination of Compliance (PDOC), includes a Prevention of Significant Deterioration (PSD) permit process (District 2000a). The District is not conducting a separate PSD permit review. Additionally, based on recent conversations with District staff (Young 2000), the District is planning to complete the UGGPP Title V permit prior to the facility's proposed start date of August 1, 2001; and further the plans to incorporate Title IV (acid rain) compliance requirements in the Title V permit.

It is staff's finding that the District's authority to construct and permit to operate should include the necessary demonstration of compliance with applicable federal LORS. Staff will continue to monitor and offer comment during the District's permitting process to ensure that the requirements of the federal LORS are met.

### **STATE**

The project, with the Final Determination of Compliance to be issued by the District, will comply with Section 41700 of the California State Health and Safety Code.

### **LOCAL**

The District issued the PDOC on December 22, 2000 (District 2000a). Staff commented on a draft of the PDOC and the District agreed to resolve all comments and issues (Young 2000). The conditions listed in the PDOC have been included in the conditions of certification AQ1 through AQ17.

## **IMPACTS**

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The Applicant performed an air dispersion modeling analysis to evaluate the project's potential impacts on the existing ambient air pollutant levels, both during construction and operation. Air dispersion modeling provides estimates of the ground level concentrations of the pollutants emitted by the proposed project.

The applicant has used the EPA-approved ISCST3 model to estimate the impacts of the project's estimated NO<sub>x</sub>, PM<sub>10</sub>, CO and SO<sub>x</sub> emissions resulting from project construction and operation. The ISC model is a steady-state Gaussian plume model, appropriate for regulatory use that can be used to assess pollution concentrations from a wide variety of sources associated with an industrial source complex. A description of the modeling analyses and results are provided in Section 5.2.4.2 and Tables 5.2-12 to 5.2-17 of the AFC (El Paso 2000a, AFC pages 5.2-29 through 5.2-32) and in the Data Request Responses (El Paso 2000d, Responses #1 through 10, 21, 24, and revised Appendix M-4). Staff added the applicant's modeled impacts to the available highest ambient background

concentrations measured during 1997 through 1999 at the Redwood City monitoring station or the Arkansas Street monitoring station located in San Francisco. A summary of the Redwood City monitoring data is provided in the **Setting** section. A summary of the Arkansas Street monitoring data is provided in Tables 5.2-2 through Tables 5.2-6 of the AFC (El Paso 2000a, AFC pages 5.2-8 and 5.2-9).

Staff compared the results of the modeling analysis with the ambient air quality standards for each respective air contaminant to determine whether the project's emission impacts would cause a new violation of the ambient air quality standards or contributes to an existing violation.

Inputs for the modeling include stack information (exhaust flow rate, temperature, and stack dimensions), specific turbine emission data and meteorological data, such as wind speed, atmospheric conditions, and site elevation. For this project, the meteorological data used as inputs to the model included hourly wind speeds and directions measured at the project site (San Francisco International Airport Weather Station) from 1991 through 1995.

## CONSTRUCTION IMPACTS

The applicant modeled the emissions of the onsite construction activities. This analysis was completed using the ISCST3 model (Version 00101). A simplified approach of four point source stacks for modeling construction equipment and a site-wide area source for modeling fugitive dust was employed. Conservatively, the hourly emissions were modeled for each of the day, while the project's defined work schedule will be limited to 7 a.m. to 7 p.m. **AIR QUALITY Table 11** provides the results of this modeling analysis.

As can be seen from the modeling results provided in Table 11, the estimated construction impacts do not show any new violations of any ambient air quality standard. Additionally, the Applicant has stated that these estimates are conservative and the use of the proposed construction vehicle tailpipe mitigation measures/emission controls were not reflected in the model inputs or impact results.

**AIR QUALITY Table 11**  
**UGGPP Project Ambient Air Quality Impact**  
**Applicant Construction Modeling Results**

Pollutant	Averaging Period	Project Impact (µg/m3)	Background Concentration (µg/m3)	Total Impact (µg/m3)	Limiting Standard (µg/m3)	Type of Standard	Percent of Standard (%)
NO2	1-Hour	177.3	196	373	470	CAAQS	79
	Annual	4.10 (a)	39.5	43.6	100	NAAQS	44
PM10	24-Hour	12.8	35.5 (b)	48.3	50	CAAQS	97
	Annual	2.0 (c)	26.4	28.4	30	CAAQS	95
CO	1-Hour	305.2	12,200	12,505	23,000	CAAQS	54
	8-Hour	138.9	4,644	4,783	10,000	CAAQS	48
SO2	1-Hour	4.12	93.6	97.7	655	CAAQS	15
	3-Hour	3.53	84.2 (d)	87.7	1300	NAAQS	7
	24-Hour	0.92	18.2	19.1	105	CAAQS	18
	Annual	0.13	5.2	5.3	80	NAAQS	7

a – Results based on ambient ratio method (ARM) using default ratio of 0.75.

b – This background condition corresponds to the highest 24-Hour PM10 concentration found during the period of maximum construction impact (i.e. highest concentration occurring during March from the period of 1997 through 1999). See Table 11a for additional modeling results for PM10.

c – Annual modeled concentration of PM10 has been adjusted to account for only 5 months of construction.

d – Maximum three hour SO2 concentrations were not available from the ambient monitoring data and were therefore assumed to be 0.9 fraction of the maximum hourly SO2 concentrations.

The initial PM10 modeling approach, which conservatively modeled the maximum hourly PM10 emissions for every hour of the year, showed the potential for new exceedances of both the 24-hour and annual PM10 ambient air quality standards. A refined modeling analysis was then performed by the Applicant to model the estimated monthly emissions and compare those results with the corresponding ambient air quality data for the months modeled. This refined analysis indicates that no new exceedances, or significant increases in existing exceedances of the PM10 ambient air quality standards are forecast. The refined PM10 emission modeling analysis conservatively models the hourly PM10 emissions potential and does not include emission reductions due to the construction vehicle tailpipe mitigation measures and emission controls. **AIR QUALITY Table 11a** provides the results of the refined PM10 24-hour modeling analysis.

**AIR QUALITY Table 11a**  
**UGGPP Ambient Air Quality Impact**  
**Detailed Construction PM10 24-Hour Modeling Results**

Pollutant	Construction Month	Project Impact (µg/m3)	Significant Impact Level (µg/m3)	Background Concentration (µg/m3)	Total Impact (µg/m3)	Limiting Standard (µg/m3)
PM10 (24-Hour)	March	12.8	5.0	35.5	48.3	50
	April	4.06	5.0	42.9	47.0	50
	May	3.74	5.0	31.4	35.1	50
	June	2.05	5.0	67.6	69.7	50
	July	0.39	5.0	54.9	55.3	50

## **STAFF MODELING ANALYSIS**

The applicant modeled the emissions of the onsite construction activities using 250-meter receptor grid spacing. Staff determined that a smaller receptor grid should be used to determine maximum impacts and remodeled the construction emissions using a 50-meter receptor grid. The Applicant's 250-meter receptor grid does not adequately model receptor locations surrounding the fence line of the project site and may underestimate the near-field construction impacts. Additionally, the following modifications were made to refine the construction emissions modeling analysis:

- The receptor height was modified from 0 meters to 1.5 meters.
- The estimated monthly emissions were modeled for each of the 5 months of the construction schedule (March to July) based on the construction emissions data provided by the applicant (El Paso 2000d, Responses #1 through 10 and revised Appendix M-4).
- The emissions were modeled from 7 am to 7 pm, which is the maximum daily construction schedule.
- A conservative short-term ARM ratio of 0.75 was used for determination of maximum one-hour NO<sub>2</sub> concentrations.
- The construction PM<sub>10</sub> fugitive dust emissions were modeled as a series of volume sources rather than a single area source. A total of 10 volume sources, evenly spaced over the area of emissions indicated by the Applicant, were modeled.
- The annual concentrations were calculated using the monthly emission modeling results.

**AIR QUALITY Table 11b** provides the results of the staff modeling analysis. As can be seen from the modeling results provided in Table 11b, the estimated construction impacts from the staff modeling analysis, which are generally similar in magnitude to the Applicant's modeling results, do not show any new violations of any ambient air quality standard. Additionally, the use of the proposed construction vehicle tailpipe mitigation measures/emission controls was not reflected in the model inputs or impact results.

**AIR QUALITY Table 11b**  
**UGGPP Project Ambient Air Quality Impact**  
**Staff Construction Modeling Results**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard (%)
NO <sub>2</sub>	1-Hour	221	196	417	470	CAA QS	89
	Annual	1.67 (a)	39.5	41.2	100	NAA QS	41
PM <sub>10</sub>	24-Hour	11.9	35.5 (b)	47.4	50	CAA QS	95
	Annual	0.28	26.4	26.7	30	CAA QS	89
CO	1-Hour	506	12,200	12,706	23,000	CAA QS	55
	8-Hour	227	4,644	4,871	10,000	CAA QS	49
SO <sub>2</sub>	1-Hour	7.14	93.6	100.7	655	CAA QS	15
	3-Hour	6.37	84.2 (c)	90.6	1300	NAA QS	7
	24-Hour	1.92	18.2	20.1	105	CAA QS	19
	Annual	0.054	5.2	5.3	80	NAA QS	7

a – Results based on ambient ratio method (ARM) using default ratio of 0.75.

b – This background condition corresponds to the highest 24-Hour PM<sub>10</sub> concentration found during the period of maximum construction impact (i.e. highest concentration occurring during March from the period of 1997 through 1999). See Table 11a for additional modeling results for PM<sub>10</sub>.

c – Maximum three hour SO<sub>2</sub> concentrations were not available from the ambient monitoring data and were therefore assumed to be 0.9 fraction of the maximum hourly SO<sub>2</sub> concentrations.

The refined PM<sub>10</sub> modeling approach used by the applicant was recreated and modified by staff as noted above. This refined analysis provided results that were similar to those provided by the Applicant and this analysis indicates that no new exceedances, or significant increases in existing exceedances of the PM<sub>10</sub> ambient air quality standards are forecast. The refined PM<sub>10</sub> emission modeling analysis conservatively models the hourly PM<sub>10</sub> emissions potential and does not include emission reductions due to the construction vehicle tailpipe mitigation measures and emission controls. **AIR QUALITY Table 11c** provides the results of the staff-refined PM<sub>10</sub> 24-hour modeling analysis.

**AIR QUALITY Table 11c**  
**UGGPP Ambient Air Quality Impact**  
**Staff Detailed Construction PM10 24-Hour Modeling Results**

Pollutant	Construction Month	Project Impact (µg/m3)	Significant Impact Level (µg/m3)	Background Concentration (µg/m3)	Total Impact (µg/m3)	Limiting Standard (µg/m3)
PM10 (24-Hour)	March	11.9	5.0	35.5	47.4	50
	April	3.44	5.0	42.9	46.3	50
	May	4.40	5.0	31.4	35.8	50
	June	1.91	5.0	67.6	69.5	50
	July	0.84	5.0	54.9	55.7	50

## OPERATION IMPACTS

The Applicant provided staff with a modeling analysis of the project's operating emissions impacts from directly emitted pollutants, which they believe demonstrates that no violations of ambient air quality standards will be caused by the operation of the project. Staff reviewed the applicant's modeling analysis and concludes that it is adequate.

It should be noted that all impacts analyses were based on the emissions shown in **AIR QUALITY Table 9**. When the District issues their Authority to Construct, the permit emission levels must be no greater than the emissions presented in this analysis in order for the impact assessment presented to remain valid.

## ***DIRECT IMPACTS***

The EPA approved ISCST3 model (Version 00101) was used to screen the potential ambient air quality impacts from the project's operation. The maximum hourly emissions during base load, as provided in **AIR QUALITY Table 9**, were modeled for each pollutant to determine the short-term impacts (1-hour, 3-hour, 8-hour and 24-hour). For the determination of the maximum NO<sub>2</sub> 1-hour impacts the start-up/shutdown emissions were modeled. The average annual emissions, as provided in **AIR QUALITY Table 10**, were modeled to determine the annual impacts.

**AIR QUALITY Table 12** presents the results of the modeling analysis. As shown in Table 12, the screening model results were compared to the District's Significant Impact Levels (SIL), as well as the state and national ambient air quality standards. SILs are included as a comparison of PSD Air Quality Analysis impact levels allowable for Major Sources under District Rule 2-2-414 (District 2000b). This rule indicates that if the modeling results indicate impacts below the SILs, then the project is not considered to cause or contribute to a violation of an air quality standard. Table 12 shows that UGGPP operation would not cause any new violations, or significantly exacerbate existing violations, of any applicable ambient air quality standard.

**AIR QUALITY Table 12**  
**UGGPP Ambient Air Quality Impact**  
**Applicant Operation ISC Modeling Results**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	BAAQMD's Significant Impact Level (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard (%)
NO <sub>2</sub>	1-Hour	5.38 (a)	196	201	19	470	CAAQS	43
	Annual	0.14	39.5	39.6	1	100	NAAQS	40
PM <sub>10</sub>	24-Hour	0.33	84.8	85.1	5	50	CAAQS	170
	Annual	0.07	26.4	26.5	1	30	CAAQS	88
CO	1-Hour	6.54	12,200	12,207	2,000	23,000	CAAQS	53
	8-Hour	2.48	4,644	4,646	500	10,000	CAAQS	46
SO <sub>2</sub>	1-Hour	1.11	93.6	94.7	--	655	CAAQS	14
	3-Hour	0.74	84.2 (b)	84.9	25	1300	NAAQS	7
	24-Hour	0.17	18.2	18.4	5	105	CAAQS	18
	Annual	0.03	5.2	5.2	1	80	NAAQS	7

(a) – This reflects base load conditions, the maximum NO<sub>x</sub> 1-hour impact during startup could be as high as 6.37 ug/m<sup>3</sup>.

(b) – 3-Hour background concentration based on 0.9 ratio of the 1-Hour background concentration.

The maximum PM<sub>10</sub> 24-hr concentration modeled for UGGPP operation is less than 0.7% of the CAAQS, and less than 0.4% of the existing maximum ambient concentration. The project's PM<sub>10</sub> 24-hour concentration provided in Table 12 is the maximum concentration found any time during the year and does not correspond to the same day as the maximum PM<sub>10</sub> background concentration shown in the table. Additionally, the ambient conditions that normally cause high PM<sub>10</sub> concentrations (high winds during dry periods or low inversion conditions during cold periods) are not the same as the conditions that maximum PM<sub>10</sub> impacts from the project. Considering all factors, the low PM<sub>10</sub> concentrations predicted for the project are considered insignificant.

### **STAFF MODELING ANALYSIS**

The applicant modeled the emissions of the project operations using 250-meter receptor grid spacing. Staff determined that a smaller receptor grid should be used to determine maximum impacts and remodeled the operations emissions using a 50-meter receptor grid. The Applicant's 250-meter receptor grid does not adequately model receptor locations surrounding the fence line of the project site and may underestimate the near-field operation impacts. Additionally, the following modifications were made to refine the operations emissions modeling analysis:

- The receptor height was modified from 0 meters to 1.5 meters.
- A conservative ARM ratio of 0.75 was used for determination of maximum one-hour and annual NO<sub>2</sub> concentrations.
- The annual concentrations were calculated using a ratio of the maximum annual hours of operation and the number of hours in a year (i.e. 4000/8760).

**AIR QUALITY Table 12a** provides the results of this modeling analysis, which are generally similar in magnitude to the Applicant's modeling results. As can be seen



from the modeling results provided in Table 12a, the UGGPP operation would not cause any new violations, or significantly exacerbate existing violations, of any applicable ambient air quality standard.

**AIR QUALITY Table 12a**  
**UGGPP Ambient Air Quality Impact**  
**Staff Operation ISC Modeling Results**

Pollutant	Averaging Period	Project Impact (µg/m <sup>3</sup> )	Background Concentration (µg/m <sup>3</sup> )	Total Impact (µg/m <sup>3</sup> )	BAAQMD's Significant Impact Level (µg/m <sup>3</sup> )	Limiting Standard (µg/m <sup>3</sup> )	Type of Standard	Percent of Standard (%)
NO <sub>2</sub> (a)	1-Hour	4.07 (b)	196	200	19	470	CAAQS	43
	Annual	0.05	39.5	39.6	1	100	NAAQS	40
PM <sub>10</sub>	24-Hour	0.82	84.8	85.6	5	50	CAAQS	171
	Annual	0.033	26.4	26.4	1	30	CAAQS	88
CO	1-Hour	6.60	12,200	12,207	2,000	23,000	CAAQS	53
	8-Hour	3.27	4,644	4,647	500	10,000	CAAQS	46
SO <sub>2</sub>	1-Hour	1.12	93.6	94.7	--	655	CAAQS	14
	3-Hour	0.78	84.2 (c)	85.0	25	1300	NA AQ S	7
	24-Hour	0.35	18.2	18.6	5	105	CA AQ S	18
	Annual	0.014	5.2	5.2	1	80	NA AQ S	7

a – Results based on ambient ratio method (ARM) using default ratio of 0.75.

b – This reflects base load conditions, the maximum NO<sub>x</sub> 1-hour impact during startup could be as high as 4.82 ug/m<sup>3</sup>.

c – 3-Hour background concentration based on 0.9 ratio of the 1-Hour background concentration.

The maximum PM<sub>10</sub> 24-hr concentration modeled for UGGPP operation is less than 2% of the CAAQS, and less than 1% of the existing maximum ambient concentration. The project's PM<sub>10</sub> 24-hour concentration provided in Table 12b is the maximum concentration found any time during the year and does not correspond to the same day as the maximum PM<sub>10</sub> background concentration shown in the table. Additionally, the ambient conditions that normally cause high PM<sub>10</sub> concentrations (high winds during dry periods or low inversion conditions during cold periods), are not the same as the conditions that the predicted maximum PM<sub>10</sub> impacts from the project would occur. Considering all factors, the low PM<sub>10</sub> concentrations predicted for the project are considered insignificant.

## SECONDARY POLLUTANT IMPACTS

The project's emissions of gaseous emissions, primarily NO<sub>x</sub>, SO<sub>2</sub>, VOC, and NH<sub>3</sub> can contribute to the formation of secondary pollutants, namely ozone and PM<sub>10</sub>, particularly ammonium nitrate and sulfate PM<sub>10</sub>.

There are air dispersion models that can be used to quantify ozone impacts, but they are used for regional planning efforts where hundreds or even thousands of

sources are input into the model over an area of several hundred or thousand square miles to determine ozone impacts. There are no regulatory agency models approved for assessing single source ozone impacts. However, because of the known relationship of NO<sub>x</sub> and VOC emissions to ozone formation, it can be said that the unmitigated emissions of NO<sub>x</sub> and VOC from the UGGPP do have the potential to contribute in some minor unquantified way to higher ozone levels in the region. However, the controlled NO<sub>x</sub> and VOC emission levels proposed by the Applicant are less than the District's offset trigger levels and are not expected to noticeably contribute to ozone concentrations or deter the District's ozone attainment progress.

Concerning secondary PM<sub>10</sub> (primarily ammonium nitrate) formation, the process of gas-to-particulate conversion is complex and depends on many factors, including local humidity and the presence of other compounds that participate in or aid the reactions that form secondary particulate. Currently, there is not an agency (EPA or CARB) recommended model or procedure for estimating secondary particulate formation.

Staff believes that the emissions of NO<sub>x</sub>, SO<sub>x</sub>, VOC, and NH<sub>3</sub> from UGGPP do have the potential to contribute (although not quantifiable) to higher secondary PM<sub>10</sub> (particularly of ammonium nitrate) levels in the region. However, the controlled emission levels of the UGGPP are so low, that any possible contribution to secondary PM<sub>10</sub> formation would be imperceptible and thus not expected to noticeably contribute to secondary PM<sub>10</sub> formation or affect the PM<sub>10</sub> attainment status for the San Francisco Bay Air Basin.

## FUMIGATION IMPACTS

There is the potential that higher short-term concentrations may occur during fumigation conditions that are caused by the rapid mixing of the plume to ground level. Fumigation conditions are generally only compared to 1-hour standards. The applicant analyzed the air quality impacts under two possible types of fumigation conditions from the project site. Type 1 fumigation, inversion breakup, typically occurs at sunrise, when sunlight heats ground-level air, resulting in vertical mixing with the stable, early morning air above it. Pollutant emissions that enter this vertically mixed volume of air can cause high concentrations of pollutant at ground level. This phenomenon usually ceases 30 to 90 minute after sunrise. Type 2 fumigation, shoreline fumigation, can result from advection of pollutants from a stable marine environment to an unstable inland environment. Shoreline fumigation must be considered for sources within 3 kilometers of a large body of water.

The EPA model SCREEN3 was used by Applicant to estimate potential impacts due the above-mentioned types of fumigation conditions. The results of the analysis, estimated for two turbine loads (100% and 50%), are summarized in **AIR QUALITY Table 13** (inversion breakup fumigation) and **AIR QUALITY Table 14** (shoreline fumigation).

**AIR QUALITY Table 13**  
**Maximum Inversion Breakup Fumigation Impacts**  
**Applicant SCREEN3 Modeling, 1- Hour Results**

Pollutant	Turbine Load (%)	Maximum Impact ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub>	100	0.69	196	197	470	CAAQS	42
	50	0.39		196			42
CO	100	0.84	12,200	12,201	23,000	CAAQS	53
	50	0.48		12,200			53
SO <sub>2</sub>	100	0.13	93.6	93.7	655	CAAQS	14
	50	0.08		93.7			14

Shoreline fumigation impacts were estimated using Thermal Internal Boundary Layer (TIBL) factors 2 through 6, as recommended by the District. Shoreline fumigation conditions were assumed to persist for 90 minutes.

**AIR QUALITY Table 14**  
**Maximum Shoreline Fumigation Impacts (a)**  
**Applicant SCREEN3 Modeling, 1- Hour Results**

Pollutant	Turbine Load (%)	Maximum Impacta ( $\mu\text{g}/\text{m}^3$ )	Background Concentration ( $\mu\text{g}/\text{m}^3$ )	Total Impact ( $\mu\text{g}/\text{m}^3$ )	Limiting Standard ( $\mu\text{g}/\text{m}^3$ )	Type of Standard	Percent of Standard
NO <sub>2</sub>	100	0.46	196	196	470	CAAQS	42
	50	0.26		196			42
CO	100	0.56	12,200	12,201	23,000	CAAQS	53
	50	0.32		12,200			53
SO <sub>2</sub>	100	0.08	93.6	93.7	655	CAAQS	14
	50	0.05		93.7			14

(a) Maximum impacts resulted with TIBL factor of 6.

As the above tables indicate, the fumigation impacts would not exceed applicable 1-hour Ambient Air Quality Standards.

## VISIBILITY IMPACTS

The Applicant has provided a Level I screening visibility impact analysis, which shows that the project is not expected to exceed any significant visibility impairment increment inside any nearby PSD Class I areas (El Paso 2000a, AFC Pages 5.2-33, 34). The nearest Class I areas to the project are the Point Reyes Wilderness Area, 41 km from the project site and the Ventana Wilderness area 290 km from the UGGPP proposed site.

## CUMULATIVE IMPACTS

To evaluate the cumulative emission impacts of the UGGPP along with other probable future emission sources, the Applicant gathered and evaluated District records to determine other sources, which along with the UGGPP, may cumulatively impact the site area (El Paso 2000d, Appendix M-11). Stationary sources located

within six miles of the UGGPP site that meet the following criteria were used to identify other emission sources that may cause cumulative impacts:

- a. Have received an Authority to Construct (ATC) permit but are not yet operational; or
- b. Have submitted complete ATC applications to the District.

Projects with ATC permits, but not yet operational, within six miles of the UGGPP site were identified. Based on District records three sources that had ATCs, but no Permits to Operate (PTOs) were located within six miles of the UGGPP. After further review only two of these sources were found to be located within six miles of the UGGPP site, and these two sources were existing sources with ATCs for equipment modification that did not involve emission increases for any pollutants.

The District indicated that they were unable to provide emission information for sources with ATC applications where the ATC has not yet been issued.

With the information available it was determined that cumulative impact modeling was not required. Staff believes that significant cumulative impacts will not occur due to the low emission impact of the UGGPP, the short-term nature of this project, and the lack of significant projects identified within six miles of the project.

## **MITIGATION**

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### **CONSTRUCTION MITIGATION**

The Applicant proposed to implement Best Available Control Measures (BACM) during construction of the project. These measures include the use of water or chemical stabilizers to disturbed areas to control fugitive dust emissions. In addition, the Applicant proposed to implement a number of additional mitigation measures to minimize impacts during the construction phase, including:

- Limiting idle times to less than five minutes, where practicable.
- Requiring catalytic converters on all on-road gasoline powered vehicles.
- Employing oxidizing soot filters and oxidation catalysts, where applicable, to mitigate PM10 construction emissions.

The oxidizing soot filter is a device that replaces the muffler of the construction equipment. It reduces CO and hydrocarbon (VOC) emissions by approximately 80-90% and PM10 emissions by approximately 90-99%. This technology has several operational constraints and the Conditions of Certification are written to give the on-site engineer the latitude to remove the oxidizing soot filters when it is determined that they are not appropriate for the specific application.

For NO<sub>2</sub> construction emissions mitigation, the staff recommends the Applicant to make a good faith effort to use available certified low NO<sub>x</sub> emission heavy-duty construction equipment. Based on EPA Tier 1 emission factors for new equipment

(circa 1996-2002), the use of low NOx equipment has the potential to reduce NOx emissions by at least 15 to 20%. The Applicant will be required to determine the availability of low NOx heavy-duty construction equipment during their construction services procurement process and detail a methodology for including this factor in the construction bid analysis.

The construction emission mitigation measures proposed by the Applicant and staff are included as conditions of certification **AQ-C1** through **AQ-C3**.

## OPERATION MITIGATION

As discussed in the project description section, the Applicant will apply air pollution control equipment to limit the project's emission levels. To reduce NOx emissions from the simple cycle combustion turbine of the UGGPP, the Applicant proposes to use water injection and a SCR system. To reduce CO and POC emissions, the Applicant proposes to use a combination of good engineering and maintenance practices, along with an oxidizing catalyst. The proposed control devices are designed to maintain the turbine emissions to 3 ppmvd NOx, 6 ppmvd CO, and 2 ppmvd POC, corrected at 15% O<sub>2</sub>. The ammonia slip emissions (from unreacted ammonia in the SCR) will be maintained at 10 ppm or less. Natural gas will be the only fuel used, which will minimize the project's SO<sub>2</sub> and PM<sub>10</sub> emissions. These emission controls meet BACT requirements.

The District's ozone attainment strategy includes emission growth allowances for new sources, as well as, emission reductions from existing sources. The attainment strategy also assumes BACT will be applied to new and modified sources and offsets will be required for sources with emissions above specified trigger levels. UGGPP is using BACT to control its emissions, which are below the District's offset trigger levels. The controlled emissions from the UGGPP are within the emissions growth allowance of the by District Staff. Therefore, the UGGPP will not interfere with the District's ozone attainment strategy.

UGGPP's secondary pollutant formation potential is minimized by the incorporation of BACT, and is not considered to significantly affect ambient concentrations of ozone or PM<sub>10</sub>. However, the 10 ppm NH<sub>3</sub> slip emissions limit proposed by the applicant, and included in the District's PDOC, is higher than the generally recommended limit of 5 ppm (CARB 1999b). The applicant is requesting a NOx emission limit level that is below the required BACT level (3 ppm vs. 5 ppm BACT level); therefore the higher NH<sub>3</sub> emissions are partially offset by the lower NOx emissions. However, the description and performance characteristics of the SCR control system for this peaker unit, which operates at a significantly higher temperature than typical combined cycle power plant SCR systems, has not been fully documented by the Applicant. Therefore, staff is recommending the inclusion of Certification Condition **AQ-C4** that requires the applicant to provide additional information about the SCR and oxidation catalyst control systems. The information requested in this certification condition will be used to determine the final NH<sub>3</sub> slip emission limit (Certification Condition **AQ-4 (c)**) for this project, and to verify design compliance all other emission limits provided in Certification Condition **AQ-4**.

In discussions with the applicant, they have stated that the catalyst emission control devices would be in-place and operating during the initial commissioning phase of the project as well as during normal start-up per vendor specification requirements. To assure that the emission abatement technology will be functioning during these phases of operation, the staff recommends Condition **AQ-C5**.

The project emissions do not trigger the offset provisions of the District's NSR rule. Based on the emissions modeling results, discussed in the Impacts section, staff believes that the project's direct and secondary impacts will not significantly contribute to violations of ambient air quality standards, or cause new violations. Therefore, staff is not recommending additional operations mitigation measures for this project.

## **CONCLUSIONS AND RECOMMENDATIONS**

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The UGGPP, with the implementation of the measures contained in the Conditions of Certification specified below, will not, either alone or in combination with other identified projects in the area, cause or contribute to any new or existing violations of applicable ambient air quality standards.

Additionally, with the implementation of the Conditions of Certification, the UGGPP will be constructed and operated in compliance with all applicable laws, ordinances, regulations, and standards identified previously in this Decision. We therefore conclude that the UGGPP will not create any significant direct or indirect adverse air quality impacts.

The District has completed a Preliminary Determination of Compliance (PDOC) and Energy Commission staff has incorporated the PDOC conditions into the SA. The District recommended conditions are presented here as Conditions AQ-1 through AQ-17. Staff also recommends the inclusion of three Conditions of Certification AQ-C1 through AQ-C3 to address the construction-related impacts, and Conditions of Certification AQ-C4 and AQ-C5 to address operation-related impacts.

Based upon these findings staff recommends certification of the UGGPP with the adoption of the District's FDOC (District 2001) and staff proposed conditions of certification.

## **CONDITIONS OF CERTIFICATION**

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### **STAFF CONDITIONS**

**AQ-C1** Prior to the commencement of project construction, the project owner shall prepare a construction Fugitive Dust Mitigation Plan that will specifically identify fugitive dust mitigation measures that will be employed for the construction of the UGGPP and related facilities.

- (a) The Construction Fugitive Dust Mitigation Plan shall specifically identify measures to limit fugitive dust emissions from construction of the project,

the transmission lines and the natural gas lines. Measures that shall be addressed include the following:

- the identification of the employee parking area(s) and surface of the parking area(s);
  - the frequency of watering of unpaved roads and disturbed areas;
  - the application of chemical dust suppressants;
  - the stabilization of storage piles and disturbed areas;
  - the use of gravel in high traffic areas;
  - the use of paved access aprons;
  - the use of posted speed limit signs;
  - the use of wheel washing areas prior to large trucks leaving the project site; and
  - the methods that will be used to clean mud and dirt tracked-out from the project site onto public roads.
- b) The following measures should be addressed for the transportation of the borrow fill material to the UGGPP project site and the transmission and natural gas line sites, if any, and the transportation of export soils and construction debris:
- the use of covers on the vehicles;
  - the wetting of the material; and
  - insuring appropriate freeboard of material in the vehicles.

**Verification:** At least 30 days prior to the start of construction, the project owner shall provide the CPM with a copy of the Construction Fugitive Dust Mitigation Plan for approval.

**AQ-C2** The project owner shall ensure that all heavy earthmoving equipment including, but not limited to, bulldozers, backhoes, compactors, loaders, motor graders and trenchers, and cranes, dump trucks and other heavy duty construction related trucks, have been properly maintained and the engines tuned to the engine manufacturer's specifications. The project owner shall also install oxidizing soot filters on all suitable construction equipment used either on the power plant construction site or associated linear construction sites. Suitability is to be determined by an independent California Licensed Mechanical Engineer, in consultation with the Air Resources Board (ARB), who will stamp and submit for approval an initial and all subsequent Suitability Reports. Where the oxidizing soot filter is determined to be unsuitable, the owner shall install and use an oxidation catalyst. The initial Suitability Report shall contain, at a minimum, the following:

#### Initial Suitability Report:

- A list of all fuel burning, construction related equipment used;
- A determination of the suitability of each piece of equipment to work appropriately with an oxidizing soot filter;
- A determination of the suitability of each piece of equipment to work appropriately with an oxidation catalyst;
- If a piece of equipment is determined to be unsuitable for an oxidizing soot filter, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination; and
- If a piece of equipment is determined to be unsuitable for both an oxidizing soot filter and an oxidizing catalyst, an explanation by the independent California Licensed Mechanical Engineer as to the cause of this determination.

#### Installation Report:

Following the installation of either the oxidizing soot filter or oxidizing catalyst as prescribed in the Initial Suitability Report, a California Licensed Mechanical Engineer will issue an Installation Report that either confirms that the installed device is functioning properly or that installation was not possible and the reason.

#### Subsequent Suitability Reports:

If a piece of construction equipment is subsequently determined to be unsuitable for an oxidizing soot filter or oxidizing catalyst after such installation has occurred, the filter or catalyst may be removed immediately. However, notification must be sent to the CPM and ARB for approval containing an explanation for the change in suitability within 10 days of the determination of unsuitability. Changes in suitability are restricted to one of three explanations that must be identified in any subsequent suitability report. Changes in suitability may not be based on the use of high-pressure fuel injectors, timing retardation and/or reduced idle time.

- a. The filter or catalyst is excessively reducing normal availability of the construction equipment due to increased downtime, and/or power output due to increased back pressure.
- b. The filter or catalyst is causing or is reasonably expected to cause significant damage to the construction equipment engine.
- c. The filter or catalyst is causing or is reasonably expected to cause a significant risk to nearby workers or the public.

**Verification:** The project owner shall submit to the CPM and ARB for approval, the initial suitability report stamped by an independent California Licensed Mechanical Engineer, 15 days prior to ground disturbance on the project site. The



project owner will submit to the CPM and ARB for approval, the installation report, stamped by an independent California Licensed Mechanical Engineer, no later than 10 days following the use of the equipment on the project site. The project owner will submit to the CPM and ARB for approval, subsequent suitability reports as required, stamped by an independent California Licensed Mechanical Engineer no later than 10 working day following a change in the suitability status of any construction equipment.

**AQ-C3** The project owner shall make a good faith effort to use available certified low-NOx emission heavy-duty construction equipment.

**Verification:** At least 15 days prior to beginning the construction bid solicitation process, the project owner shall submit to the CPM a bid evaluation plan for approval. This bid evaluation plan shall include a requirement that all bidders include information regarding the availability of low-NOx emission equipment and shall include a methodology for including this information in the overall bid evaluation process. The project owner shall maintain all construction bid records on the site for six months following the start of commercial operation.

**AQ-C4** The project owner shall provide to the CPM and the District, vendor and design data for the SCR and Oxidation catalyst systems, which will include performance guarantees that demonstrate that the systems have been designed to meet the NOx, CO and POC emission concentration limits specified in Certification Condition AQ-4. Additionally, the vendor data shall include ammonia slip performance data to be used to determine the final ammonia slip emission limit in Certification Condition AQ-4 (c).

**Verification:** At least 30 days prior to the installation of the catalyst systems, the project owner shall provide the CPM and the District with a copy of the SCR and Oxidation catalyst systems vendor and design data for approval.

**AQ-C5** The project owner shall operate the water injection and post-combustion emission control devices (SCR and Oxidation catalyst systems) at all times, as practical per manufacturer recommendations, during turbine operation; including but not limited to normal operation, startup/shutdown, and during initial commissioning.

**Verification:** The project owner shall provide operating interlocks, or other control systems, that require the emission control equipment to be in operation during turbine operation. At least 30 days prior to the installation of the catalyst systems, the project owner shall provide the CPM documentation on the control systems, procedures, etc. that will be used to ensure proper control of equipment operation.

## DISTRICT PRELIMINARY DETERMINATION OF COMPLIANCE CONDITIONS

### **Definitions:**

Clock Hour:	Any continuous 60-minute period beginning on the hour.
Calendar Day:	Any continuous 24-hour period beginning at 12:00 AM or 0000 hours.
Year:	Any consecutive twelve-month period of time
Heat Input:	All heat inputs refer to the heat input at the higher heating value (HHV) of the fuel, in BTU/scf.
Rolling three-hour period:	Any three-hour period that begins on the hour and does not include start-up or shutdown periods.
Firing Hours:	Period of time during which fuel is flowing to a unit, measured in fifteen minute increments.
Gas Turbine Start-up Mode:	The first 10 minutes of continuous fuel flow to the Gas Turbine after fuel flow is initiated; or the amount of time from Gas Turbine fuel flow initiation until the requirements listed in Condition 4 are met, whichever is less.
Gas Turbine Shutdown Mode:	The last 10 minutes before fuel flow to the Gas Turbine is terminated; or the amount of time from non-compliance with any requirement listed in Condition 4 until termination of fuel flow to the Gas Turbine, whichever is less.

**AQ-1** Source 1 (S-1 Gas Turbine) shall be fired on natural gas exclusively. (Basis: BACT for SO<sub>2</sub> and PM<sub>10</sub>)

**Verification:** Upon request, the owner/operator shall make all records and reports available at the project site to representatives of the District, ARB, EPA and the Energy Commission for inspection.

**AQ-2** The heat input rate of S-1 shall not exceed 1,950,000 MMBtu per consecutive 12 month period, higher heating value, and the cumulative turbine start-up and shutdown sequences for these periods shall not exceed 125 hours total. (Basis: cumulative increase)

**Verification:** See Verification in Condition AQ-1.

**AQ-3** S-1 shall be abated by the properly operated and properly maintained A-1 Selective Catalytic Reduction (SCR) unit and the oxidizing catalyst, A-2. (BACT for NOx and CO)

**Verification:** Verification: The project owner/operator shall make the site available to representatives of the District, ARB, EPA and CEC for inspection.

**AQ-4** The Gas Turbine (S-1) shall comply with requirements (a) through (f) below, except during gas turbine start-up or shutdown.

- a. The nitrogen oxide emission concentration at emission point P-1 shall not exceed 3.0 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any 1-hour period, nor 6.5 pounds during any hour. (BACT for NOx)
- b. The carbon monoxide emission concentration at P-1 shall not exceed 6.0 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period, nor 7.9 pounds during any hour. (BACT for CO)
- c. Ammonia (NH<sub>3</sub>) emission concentrations at P-1 shall not exceed 10 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period. This ammonia emission concentration shall be verified by the continuous recording of the ammonia injection rate to A-1 SCR System. The correlation between the gas turbine heat input rates, A-1 SCR System ammonia injection rates, and corresponding ammonia emission concentration at emission point P-1 shall be determined in accordance with Condition AQ-16. Prior to issuance of the Permit to Operate for this project, if substantial data is provided to the District that demonstrates that a lower ammonia slip limit is achieved in practice for a similar-sized natural-gas fired, simple-cycle gas turbine abated by an SCR system, then the District shall reduce the ammonia slip limit below 10.0 ppmv as appropriate. (Toxic Risk Management Policy for NH<sub>3</sub>, CEQA)
- d. The precursor organic compound emission concentration at P-1 shall not exceed 2.0 ppmv, on a dry basis, corrected to 15% O<sub>2</sub>, averaged over any rolling 3-hour period, nor 1.0 pounds per hour. (BACT for POC)
- e. Sulfur dioxide (SO<sub>2</sub>) mass emissions at P-1 shall not exceed 1.34 pounds per hour. (BACT for SO<sub>2</sub>)
- f. Particulate matter (PM<sub>10</sub>) mass emissions at P-1 shall not exceed 3.14 pounds per hour, including condensable particulate matter. (BACT for PM<sub>10</sub>)

**Verification:** The project owner/operator shall submit to the CEC CPM for the preceding calendar quarter by January 30, April 30, July 30 and October 30 of each year the permit is in effect, the air pollutant concentrations and mass emissions data verifying compliance with this condition.

**AQ-5** Emissions from S-1, Gas Turbine, including emissions generated during gas turbine start-ups, gas turbine shutdowns, shall not exceed the following limits during any consecutive twelve-month period:

- a. 12.7 tons of NO<sub>x</sub> (as NO<sub>2</sub>) per year (Basis: Cumulative Increase)
- b. 15.4 tons of CO per year (Basis: Cumulative Increase)
- c. 1.4 tons of POC (as CH<sub>4</sub>) per year (Basis: Cumulative Increase)
- d. 6.1 tons of PM<sub>10</sub> per year (Basis: Cumulative Increase)
- e. 2.6 tons of SO<sub>2</sub> per year (Basis: Cumulative Increase)

**Verification:** As part of the information submittals of Condition AQ-4, the project owner/operator shall submit data verifying the annual emission limits of this condition.

**AQ-6** The owner/operator of the United Golden Gate Power Plant (UGGPP) shall demonstrate compliance with Conditions AQ-4 and 5 through the use of properly operated and maintained continuous emission monitors and data recorders.

The monitored parameters shall be recorded at least once every 15 minutes (excluding normal calibration periods or when the monitored source is not in operation) for the Gas Turbine. The owner/operator shall use District-approved methods to calculate heat input rates, mass emission rates, and emission concentrations, summarized for each clock hour and each calendar day.

(Basis: 1-520.1, 9-9-501, BACT, Offsets, NSPS, PSD, Cumulative Increase)

**Verification:** See Verification in Condition AQ-1.

**AQ-7** The owner/operator shall demonstrate compliance with Conditions AQ-1 and 2, and 4(a) and 4(b), 5(a) and 5(b), by using properly operated and maintained continuous monitors (during all hours of operation including equipment start-up and shutdown periods) for all of the following parameters:

- a. Fuel flow rates for S-1.
- b. Oxygen concentrations, NO<sub>x</sub> concentrations, and CO concentrations at exhaust point P-1.
- c. Ammonia injection rate at A-1 SCR System.
- d. Steam injection rate at S-1 Gas Turbine.

The owner/operator shall record all of the above parameters every 15 minutes (excluding normal calibration periods) and shall summarize all of the above parameters for each clock hour. For each calendar day, the owner/operator shall calculate and record the total firing hours, the average

hourly fuel flow rates, and pollutant emission concentrations. The owner/operator will also record the total number of hours of startup and shutdown each day.

The owner/operator shall use the parameters measured above and District-approved calculation methods to calculate the following parameters:

- e. Heat input rate for S-1.
- f. Corrected NO<sub>x</sub> concentrations, NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), corrected CO concentrations, and CO mass emissions at exhaust point P-1.

**Verification:** See Verification in Condition AQ-1.

**AQ-8** The District-approved continuous monitors specified in Condition AQ-6 and AQ-7 shall be installed, calibrated, and operational prior to first firing of the Gas Turbine. After first firing of the turbine, the detection range of these continuous emission monitors shall be adjusted as necessary to accurately measure the resulting range of CO and NO<sub>x</sub> emission concentrations. The type, specifications, and location of these monitors shall be subject to District review and approval.

For the gas turbine, the owner/operator shall record the parameters specified in Condition AQ-7(a) through 7(f) at least once every 15 minutes (excluding normal calibration periods). As specified below, the owner/operator shall calculate and record the following data:

- a. Total Heat Input Rate for every clock hour and the average hourly Heat Input Rate for every rolling 3-hour period.
- b. On an hourly basis, the cumulative total Heat Input Rate for each calendar day for the Gas Turbine (S-1).
- c. The average NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), CO mass emissions, and corrected NO<sub>x</sub> and CO emission concentrations for every clock hour and for every rolling 3-hour period.
- d. On an hourly basis, the cumulative total NO<sub>x</sub> mass emissions (as NO<sub>2</sub>) and the cumulative total CO mass emissions, for each calendar day for the Gas Turbine (S-1).
- e. For each calendar day, the average hourly Heat Input Rates, corrected NO<sub>x</sub> emission concentrations, NO<sub>x</sub> mass emissions (as NO<sub>2</sub>), corrected CO emission concentrations, and CO mass emissions for the Gas Turbine.
- f. On a daily basis, the cumulative total NO<sub>x</sub> mass emissions (as NO<sub>2</sub>) and cumulative total CO mass emissions, for the previous consecutive twelve month period for the Gas Turbine.

(Basis: 1-520.1, 9-9-501, BACT, Offsets, NSPS, PSD, Cumulative Increase)

**Verification:** See Verification in Condition AQ-1.

**AQ-9** To demonstrate compliance with Conditions AQ-4(d) through 4(f), and 5(c) through 5(e), the owner/operator shall calculate and record on a daily basis, the Precursor Organic Compound (POC) mass emissions, Fine Particulate Matter (PM10) mass emissions (including condensable particulate matter), and Sulfur Dioxide (SO2) mass emissions from P-1. The owner/operator shall use the actual Heat Input Rates calculated pursuant to Conditions AQ-6 and 7, actual Gas Turbine Start-up Times, actual Gas Turbine Shutdown Times, and District-approved emission factors to calculate these emissions. The calculated emissions shall be presented for each calendar day, POC, PM10, and SO2 emissions shall be summarized for S-1 Gas Turbine.

(Basis: Offsets, Cumulative Increase)

**Verification:** See Verification in Condition AQ-1.

**AQ-10** The owner/operator of the UGGPP shall obtain approval for all source test procedures from the District's Source Test Section prior to conducting any tests. The owner/operator shall comply with all applicable testing requirements for continuous emission monitors as specified in Volume V of the District's Manual of Procedures. The owner/operator shall notify the District's Source Test Section in writing of the source test protocols and projected test dates at least 7 days prior to the testing date(s). As indicated above, the owner/operator shall measure the contribution of condensable PM (back half) to the total PM10 emissions. However, the owner/operator may propose alternative measuring techniques to measure condensable PM such as the use of a dilution tunnel or other appropriate method used to capture semi-volatile organic compounds. Source test results shall be submitted to the District within 60 days of conducting the tests. (BACT)

**Verification:** The project owner/operator shall provide the District and CEC CPM source test protocols and projected test dates for approval at least seven days prior to the testing date(s). Additionally, the project owner/operator shall provide the District and CEC CPM the source test results within 60 days of conducting the tests.

**AQ-11** The owner/operator of the UGGPP shall submit all reports (including, but not limited to monthly CEM reports, monitor breakdown reports, emission excess reports, equipment breakdown reports, etc.) as required by District Rules or Regulations and in accordance with all procedures and time limits specified in the Rule, Regulation, Manual of Procedures, or Enforcement Division Policies & Procedures Manual. (Regulation 2-6-502)

**Verification:** The project owner/operator shall include all reports required in this condition in the quarterly reports submitted under Condition AQ-4.

**AQ-12** The owner/operator of the UGGPP shall maintain all records and reports on site for a minimum of 5 years. These records shall include but are not

limited to: continuous monitoring records (firing hours, fuel flows, emission rates, monitor excesses, breakdowns, etc.), source test and analytical records, emission calculation records, records of plant upsets and related incidents. The owner/operator shall make all records and reports available to District staff upon request. (Regulation 2-6-501)

**Verification:** See Verification in Condition AQ-1.

**AQ-13** The owner/operator of UGGPP shall provide adequate stack sampling ports and platforms to enable the performance of source testing. The location and configuration of the stack sampling ports shall be subject to District review and approval. (Regulation 1-501)

**Verification:** Thirty days prior to the start of construction of the emission stack, the project owner/operator shall provide the District and CPM an "approved for construction" drawing showing the appropriate stack height and location of sampling ports and platforms. The project owner/operator shall make the site available to representatives of the District, ARB, EPA and the Energy Commission for inspection.

**AQ-14** Within 30 days of the issuance of the Authority to Construct for the UGGPP, the owner/operator shall contact the BAAQMD Technical Services Division regarding requirements for the continuous monitors, sampling ports, platforms, and source tests required by Conditions AQ-6 through 9, and 17. All source testing and monitoring shall be conducted in accordance with the BAAQMD Manual of Procedures. (Regulation 1-501)

**Verification:** Within 30 days of the issuance of the Authority to Construct, the project owner/operator shall contact the BAAQMD Technical Services Division and provide the technical information to demonstrate compliance with this condition.

**AQ-15** The owner/operator of UGGPP shall submit an application for a major facility permit and a Phase II Acid Rain Permit (Title IV) to the APCO and to EPA within 12 months after the facility becomes subject to Regulation 2, Rule 6. Operation of the Gas Turbine S-1 without a Title IV operating permit may not occur sooner than 24 months after the application is received by the District. (Basis: Regulation 2-6-404.1 and Regulation 2-7).

**Verification:** The project owner shall submit to the District and CEC CPM the applications for a major facility permit and Phase II Acid Rain permit, and obtain such permits prior to the start of operation.

**AQ-16** Within 60 days of start-up of the UGGPP, the owner/operator shall conduct a District-approved source test on exhaust point P-1 to determine the corrected ammonia (NH<sub>3</sub>) emission concentration to determine

compliance with Condition AQ-4(c). The source test shall determine the correlation between the heat input rates of the gas turbine, A-1 SCR System ammonia injection rate, and the corresponding NH<sub>3</sub> emission concentration at emission point P-1. The source test shall be conducted over the expected operating range of the turbine (including, but not limited to, minimum and 100 % load) to establish the range of ammonia injection rates necessary to achieve NO<sub>x</sub> emission reductions while maintaining ammonia slip levels. Continuing compliance with Condition AQ-4(c) shall be demonstrated through calculations of corrected ammonia concentrations based upon the source test correlation and continuous records of ammonia injection rates. (Basis: TRMP)

**Verification:** The project owner/operator shall provide the results of the source test per the requirements of Condition AQ-10.

**AQ-17** Within 60 days of start-up of the UGGPP and on an annual basis thereafter, the owner/operator shall conduct a District-approved source test on exhaust point P-1 while S-1 Gas Turbine is operating at maximum load to determine compliance with Conditions AQ-4(a), 4(b), 4(d), and 4(e), while S-1 Gas Turbine is operating at minimum load to determine compliance with Condition AQ-4(b) to determine compliance with the limits of Conditions AQ-4, and to verify the accuracy and calibration of the continuous emission monitors required in Condition AQ-6. (BACT, Offsets)

**Verification:** The project owner/operator shall provide the results of the source tests per the requirements of Condition AQ-10.



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# PUBLIC HEALTH

Testimony of Obed Odoemelum, Ph.D.

## INTRODUCTION

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Operating the proposed Phase I of the United Golden Gate Power Project (UGGPP) would produce combustion products and possibly expose the general public and workers to these pollutants as well as the toxic chemicals associated with other aspects of facility operations. The purpose of this public health analysis is to determine whether a significant health risk would result from public exposure to these chemicals and combustion by-products as routinely emitted during project operations. The issue of possible worker exposure is addressed in the **Worker Safety and Fire Protection** section of this Staff Assessment (SA). The health significance of exposure to electric and magnetic fields (EMF) is usually addressed separately in a **Transmission Line Safety and Nuisance** (TLSN) section along with issues related to the physical presence of the line involved. However, since no new transmission line is proposed for the project, a TLSN section was not prepared. The health significance of such EMF exposure is addressed below in this **Public Health** section as related to the project's interconnection with the area's power grid.

The pollutants of primary concern in this section are those for which no air quality standards have been established, known as noncriteria pollutants, toxic air pollutants, or air toxics. Those pollutants for which ambient air quality standards have been established are known as criteria pollutants. Since, as noted in the **Air Quality** section, this project is proposed for an area with existing violations of specific air quality standards, the potential for impact exacerbation is addressed in this **Public Health** section in assessing the need for specific mitigation.

The criteria pollutants are also identified in this section (along with regulations for their control) because of their usually significant contribution to the total pollutant exposure in any given area. Furthermore, the same control technologies may be effective for controlling both types of pollutants when emitted from the same source. Compliance with the required control technologies is discussed in the **Air Quality** section.

## LAWS ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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### FEDERAL

The Clean Air Act of 1970 (42 U.S.C., section 7401 et seq.) required establishment of ambient air quality standards to protect the public from the effects of air pollutants. These standards are established by the United States Environmental Protection Agency (EPA) for the major air pollutants: nitrogen dioxide, ozone, sulfur dioxide, carbon monoxide, sulfates, and particulate matter with a diameter of 10 micron or less (PM10), and lead.

## STATE

California Health and Safety Code section 39606 requires the California Air Resources Board (ARB) to establish California's ambient air quality standards to reflect the California-specific conditions that influence its air quality. Such standards have been established by the ARB for ozone, carbon monoxide, sulfur dioxide, PM10, lead, hydrogen sulfide, vinyl chloride and nitrogen dioxide. The same biological mechanisms underlie some of the health effects of most of these criteria pollutants as well as the noncriteria pollutants. The California standards are listed together with the corresponding federal standards in the **Air Quality** section.

California Health and Safety Code section 41700 states that "No person shall discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause or have a natural tendency to cause injury or damage business or property."

The California Health and Safety Code section 39650 et seq. mandates that the California Environmental Protection Agency (Cal-EPA) establish safe exposure limits for toxic, noncriteria air pollutants and identify the best available methods for their control. These laws also require that the new source review rules for each air district include regulations establishing procedures to control the emission of these pollutants. The toxic emissions from natural gas combustion are listed in ARB's April 11, 1996, California Toxic Emissions Factors (CATEF) database for natural gas-fired combustion turbines. Cal-EPA has developed specific cancer potency estimates for assessing their related cancer risks at specific exposure levels. For noncancer-causing toxic air pollutants, Cal-EPA established specific no-effects levels (known as reference exposure levels, or RELs) for assessing the likelihood of producing health effects at specific exposure levels. Such health effects would be considered significant only when exposure exceeds these reference levels. The Energy Commission staff (staff) uses these Cal-EPA potency estimates and reference exposure values in its health risk assessments.

California Health and Safety Code section 44300 et seq. requires facilities, which emit large quantities of criteria pollutants and any amount of noncriteria pollutants to provide the local air district an inventory of toxic emissions. Such facilities may also be required to prepare a quantitative health risk assessment to address the potential health risks involved. The ARB ensures statewide implementation of these requirements through the state's Area Air Quality Management Districts or Air Districts.

## LOCAL

Local implementation of provisions of the Health and Safety Code section 44300 in the project area is ensured by the area's Air District, the Bay Area Air Quality Management District (BAAQMD). UGGPP has complied with the related requirements.

## SETTING

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According to information from the applicant, the El Paso Merchant Energy or El Paso, the proposed facility will be located on a two-acre site within the boundaries of the San Francisco International Airport (El Paso 2000a, AFC pages 5.16-1, 5.9-1 through 5.9-4). The site, which is adjacent to both the United Cogeneration Inc. (UCI) facility site and the United Airlines Maintenance Operations Center, is currently used as a parking lot for United Airlines. The area around the site is zoned mostly for industrial and commercial uses, accounting for the absence of residences within three-quarters of a mile of the site.

As discussed by the applicant, the project area is located in the San Francisco Bay Air Basin, which is non-attainment (meaning that its ambient levels are currently higher than applicable air quality standards) for ozone at the federal and state levels (El Paso 2000a, AFC pages 5.2-8 through 5.2-13). For PM10, the area is non-attainment only with respect to the state's standard. Such non-attainment status requires the offsetting of these two pollutants when contributed by UGGPP and any other new sources in the air basin. However, the Air District's requirement for such offsets is triggered only when such contributions are above specific thresholds.

Ozone is formed secondarily from the sunlight-driven interaction of its precursor pollutants (NO<sub>x</sub> and VOCs) transported from one point to the other. Since such transport occurs throughout a given air basin, any ozone problem is considered a basin-wide problem for which a basin-wide control strategy is formulated by the local Air District with respect to sources of the precursor pollutants. This strategy consists of (a) emission control requirements with respect to each project's emissions and (b) offset requirements with respect to the basin-wide precursor transport.

PM10 also constitutes a basin-wide problem as derived from fugitive dust, the interaction of its precursors (which include NO<sub>x</sub> and VOCs), or emitted directly from sources throughout the air basin. Its emission from each given source could create a localized health problem when project-related exposures are added to the existing basin-wide, background levels. The potential for localized impacts is minimized through specific emission controls while its potential contribution on a basin-wide basis is minimized through specific offset requirements.

Each air quality standard is established with the adequate margin of safety necessary to protect against health effects in both the general public and individuals more susceptible to the effects of environmental pollutants. These sensitive individuals include children, the elderly and those with certain pre-existing diseases. These margins of safety are established from the health effects information available during the standard setting period. As more is known from additional health effects studies, each standard could be revised to ensure the health protection at issue. The potential for emissions-related health impacts is assessed for each source using specific assessment methods.

## **METHOD OF ANALYSIS**

Any significant pollution-related impacts from projects such as UGGPP would be mainly associated with emissions from their natural gas-fired combustion turbines. Potential public exposure in the surrounding area is estimated through air dispersion modeling. These exposure estimates are then used by staff together with data characterizing the existing conditions to establish whether total exposures would be above or below the applicable air quality standards or reference exposure levels established against noncancer effects. For cancer-causing (or carcinogenic) effects, such assessment is made in terms of the potential for exposure at levels whose related cancer risks are considered significant by regulatory agencies. The procedure for evaluating the potential for these cancer and noncancer health effects is known as a health risk assessment process and consists of the following steps:

- A hazard identification step in which each pollutant of concern is identified along with possible health effects;
- A dose-response assessment step in which the relation between the magnitude of exposure and the probability of effects is established;
- An exposure assessment step in which the possible extent of pollutant exposures from a project is established for all possible pathways by dispersion modeling; and
- A risk characterization step in which the nature and the magnitude of the possible human health risk is assessed.

## ***HEALTH EFFECTS ASSESSED***

Health risks from a source of air pollutants can result from high-level exposure, which creates immediate-onset (acute) effects, or prolonged low-level exposure, which creates chronic effects. Noncancer effects are assumed to result after exposure above specific thresholds. Therefore, an analysis of the potential for these effects will include consideration of background or ambient levels of the toxic pollutants being assessed. Such pollutants are generally emitted at relatively low levels as compared to the criteria pollutants whose background levels are required to be measured and considered in assessing the potential for health impacts.

For natural gas-burning facilities such as UGGPP, high-level exposure to toxic pollutants (which could cause acute effects) could occur only during major accidents and not from routine operations when emissions are much lower. When the area is designated as non-attainment for a criteria pollutant, acute health impacts could increase within the population with further additions of that same pollutant from a project.

Since acute health impacts are not associated with normal noncriteria pollutant emissions, effects from chronic exposures are considered of greater concern than acute effects in assessing the potential for impacts. Such chronic effects may manifest as cancer or health effects other than cancer. Only noncancer effects are expected from chronic exposures to the criteria pollutants.

## **ASSESSING THE LIKELIHOOD OF NONCANCER EFFECTS**

The method used by regulatory agencies to assess the likelihood of acute or chronic pollutant impacts is the hazard index method. In this approach, a hazard index is calculated as a numerical representation of the likelihood of significant health impacts at the exposure levels expected for the source in question. This index is calculated by dividing the exposure estimate by the applicable reference exposure level or air quality standard. After calculating the hazard indices for the individual pollutants, these indices are added together for all those that affect the same part of the body or target organ, to obtain a total hazard index. Total hazard indices of 1.0 or less are regarded as indicative of the absence of significant effects. However, exposure yielding a total hazard index of more than 1.0 may indicate a significant potential for the noncancer effects being considered.

Project impact, at the maximum point of impact, is calculated to be a maximum acute hazard index of 0.016 and a maximum chronic hazard index of 0.0032. These values are well below the significance threshold of 1.0, and indicate no significant chronic or acute public health hazard.

## **ASSESSING THE POTENTIAL RISK OF CANCER**

According to present understanding, cancer from carcinogenic exposure results from biological effects at the molecular level. Such effects are currently assumed possible from every exposure to a carcinogen. Therefore, staff and other regulatory agencies generally consider the likelihood of cancer as more serious than the likelihood of noncancer effects for assessing the environmental acceptability of a source of pollutants. This accounts for the prominence of theoretical cancer risk estimates in the environmental risk assessment process.

For any source of specific concern, the potential risk of cancer is obtained by multiplying the exposure estimate by the potency factors for the individual carcinogens involved. These potency factors are numerical values established to represent the cancer-causing potential of one carcinogen as compared to the others. After calculating these carcinogenic risk values for the individual pollutants, they are added together to obtain the total incremental cancer risk associated with operation of the project. Given the conservatism in the various phases of this risk calculation process, these numerical estimates are regarded as only representing the upper bounds on the cancer risk at issue. The actual risk will likely be much lower and could indeed be zero. The significance of these estimates as indicators of a real cancer hazard is assessed according to specific evaluative criteria.

## **STAFF'S SIGNIFICANCE CRITERIA**

Various state and federal agencies specify different cancer risk levels as levels of significance with regard to specific sources. For example, a risk of 10 in a million is considered under the Air Toxics "Hot Spots" (AB 2588) and the Proposition 65 programs as significant, and therefore, used as a threshold for public notification in cases of air toxics emissions from existing sources.

The Energy Commission staff considers a potential cancer risk of one in a million as the de minimis level, which is the level below which the related exposure is negligible (meaning that project operation is not expected to result in any increase in cancer). Above this level, further mitigation could be recommended after consideration of issues related to the limitations of the risk assessment process.

For noncarcinogenic pollutants, staff considers significant health impacts to be unlikely when the hazard index estimate is 1.0 or less. If more than 1.0, staff would regard the related emissions as potentially significant from an environmental health perspective but would recommend specific mitigation only after consideration of issues related to the project's contribution to the ambient pollution levels and the uncertainties in the assessment process.

## IMPACTS

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### PROJECT SPECIFIC IMPACTS

The health impacts from the siting and operation of the proposed UGGPP can be considered separately as construction-phase impacts and operational-phase impacts.

#### **CONSTRUCTION PHASE IMPACTS**

Possible construction-phase impacts, as noted by the applicant, are those from human exposure to (a) the windblown dust from site grading and other construction-related activities, and (b) emissions from the heavy equipment and vehicles to be used for such construction (El Paso 2000a, AFC pages 5.2-25, through 5.2-30, and Appendix M). Upon reviewing their method and data, staff finds that the applicant used an acceptable procedure for estimating the project's construction-related PM10 levels from fugitive dust generation from the site, which as a parking lot, is presently paved. As noted by the applicant, the possibility of exceeding the ambient NOX and PM10 standards (because of relatively high background levels) will be minimized through specific mitigation measures (El Paso 2000a, AFC page 5.2-34) which staff has specified in the **Air Quality** section as part of the recommended conditions for certification section. Since the site is presently paved with no soil contaminants, there will be no on-site exposure to fugitive dust-bound toxic pollutants capable of the effects of concern in this **Public Health** section. Staff considers the applicant's intended dust suppression measures as adequate during the scheduled five-month construction period.

As noted by the applicant, emissions from construction-related equipment will be localized within the project site (El Paso 2000a, AFC page 5.16-1). Such emissions will be minimized through the specific control measures specified by the applicant for this construction period (El Paso 2000a, AFC page 5.2-34). Since chronic health impacts are not usually expected from equipment emissions within the relatively short construction period, only acute health effects could be significant in the project's impact areas. Given (a) the efficacy of the proposed control measures with respect to criteria and noncriteria pollutants, and (b) the absence of a potentially exposed public, staff does not expect these construction-related



emissions to pose a significant risk of health effects during this construction period. These proposed control measures are specified in the **Air Quality** section as part of staff's recommended conditions for certification.

### ***DIRECT OPERATIONAL IMPACTS***

The applicant conducted the health risk assessment for the project-related noncriteria pollutants of potential significance. This assessment was conducted according to procedures specified in the 1993 California Air Pollution Control Officer's Association (CAPCOA) guidelines for sources of this type. The results were provided to staff along with documentation of the assumptions used (El Paso 2000a, AFC pages 5.16-1 through 5.16-6). Such documentation was provided with regard to the following:

- Pollutants considered;
- Emission levels assumed for the pollutants involved;
- Dispersion modeling used to estimate potential exposure levels;
- Exposure pathways considered;
- The cancer risk estimation process;
- Hazard index calculation; and
- Characterization of project-related risk estimates.

Staff has found these assumptions to be generally acceptable for evaluating the proposed project. We concur with the applicant's findings with regard to the numerical public health risk estimates expressed either in terms of the hazard index for each noncarcinogenic pollutant, or a cancer risk for estimated levels of the carcinogenic pollutants. These analyses were conducted to establish the maximum potential for acute and chronic effects on body systems such as the liver, central nervous system, the immune system, kidneys, the reproductive system, the skin and the respiratory system.

### **IMPACTS ASSOCIATED WITH THE PROJECT'S NONCRITERIA POLLUTANTS.**

The following noncriteria pollutants were considered with respect to noncancer effects: ammonia, in case of use of the selective catalytic reduction (SCR) system alternative for NO<sub>x</sub> control, acetaldehyde, acrolein, benzene, 1,3 butadiene; ethylbenzene, formaldehyde, hexane, naphthalene, polycyclic aromatic hydrocarbons (PAHs), propylene oxide, toluene, and xylenes. The following were considered with regard to a possible cancer risk: acetaldehyde, benzene, 1,3 butadiene, formaldehyde, PAHs and propylene oxide.

A maximum chronic hazard index of 0.0032 was calculated for the maximally exposed individual while an acute hazard index of 0.016 was calculated for the same individual (El Paso 2000a, AFC page 5.16-5). These indices are significantly below the levels of potential health significance, indicating that no significant health impacts would be associated with the project's noncriteria pollutants.

The highest combined cancer risk was estimated to be 0.094 in a million for an individual at the point of maximum impact. This risk was calculated using existing procedures, in which it is assumed that the individual would be exposed at the highest possible levels to all the carcinogenic pollutants from the project for 70 years. This risk value is significantly below staff's de minimis level, meaning that the project's carcinogenic emissions would not pose a significant cancer risk anywhere in the project area.

#### **IMPACTS ASSOCIATED WITH THE PROJECT'S CRITERIA POLLUTANTS**

Staff assessed only the incremental impacts of ozone and PM10 impacts among the project's criteria pollutants, because of the project area's noted designation as non-attainment for both pollutants. As noted by the applicant, the highest background PM10 level measured at the two monitoring stations closest to the project site between 1997 and 1999 was 85 ug/m<sup>3</sup> (El Paso 2000a, AFC pages 1-6, 5.2-9, and 5.2-30). When this is divided by the state's 24-hour standard of 50 ug/m<sup>3</sup>, it yields a maximum background hazard index of 1.7, which quantitatively reflects (a) the level of the existing health hazard to area residents and (b) the need to prevent significant additions to ambient levels. Background PM10 levels at the two closest monitoring stations showed that the federal 24-hour standard (150 ug/m<sup>3</sup>), and the state and federal annual standards (geometric mean of 30 ug/m<sup>3</sup> and arithmetic mean of 50 ug/m<sup>3</sup>, respectively) were not violated between 1997 and 1999. This determination of significance is made by the Air District in terms of emissions above specific thresholds below which attainment would still be possible within their target period.

The highest background ozone concentrations measured at the two monitoring stations closest to the project site between 1997 and 1999 was 0.09 parts per million (or ppm). The state's 1-hour standard of 0.09 ppm was not exceeded during this period at the two closest monitoring stations. When divided by the state's 1-hour standard, this yields a maximum background hazard index of 1.0. This reflects (a) the effectiveness of BAAQMD's basin-wide ozone reduction plan and (b) the need for continued compliance with its requirements.

As reflected in the information from the applicant, the project's contribution to the area's PM10 and ozone precursors would be at levels staff considers insignificant with respect to the applicable standards. The maximum impacts for a 24-hour period, according to the applicant's modeling, would be an addition of 0.29 ug/m<sup>3</sup> of PM10 and an addition of 5.38 ug/m<sup>3</sup> of the ozone precursor NOx (El Paso 2000a, AFC page 5.2-30). The emissions from the project are also below the levels requiring offsets under BAAQMD's regulations. Therefore, staff is not requiring offsets in the **Air Quality** section for any criteria pollutants. Staff considers the emission controls as presented in the **Air Quality** section as appropriate with respect to the criteria and noncriteria pollutants at issue in this analysis.

#### **CUMULATIVE IMPACTS**

When toxic pollutants are emitted from multiple sources within a given area, the cumulative, or additive, impacts of such emissions could, in concept, lead to significant health impacts within the population, even when such pollutants are

emitted at insignificant levels from the individual sources involved. Analyses of such emissions have shown, however, that the peak impacts of such toxic pollutants are normally localized within relatively short distances from the source. Toxic pollutant levels beyond the point of maximum impact normally fall within ambient background levels. Given the low cancer and non-cancer risks from the project's emissions, the project will not contribute significantly to any area exposure of a cumulative nature (El Paso 2000a, AFC page 5.2-34).

## **EXPOSURE TO THE PROJECTS ELECTRIC AND MAGNETIC FIELDS**

No transmission lines are proposed for UGGPP. According to the applicant, the generated power will be transmitted at 115 kV to the PG&E power grid through connections at the 115 kV switchyard for the nearby United Cogeneration Inc. (UCI) cogeneration power plant (El Paso 2000a, AFC pages 3.4-2 and 3.6-1). This switchyard will be upgraded for this purpose without major modifications. Connection from the project to the switchyard will be made through a line of about 80 feet. Since there are no residences in the traversed area, no long-term residential exposures would occur. It is such residential field exposure that is at the root of the present health concern about the presence of high-voltage lines.

The only field exposure for this project will be to workers on site or around the project. These relatively short-term exposures are well understood and have not been reliably associated with health effects in humans. Staff therefore, recommends no specific design or operational changes because of the concern over EMF exposure.

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CONCLUSIONS**

Staff has determined that the construction and operation of the proposed natural gas-burning project will not pose a significant public health risk to the surrounding population with respect to the toxic pollutants considered. The levels of the project's criteria pollutants indicate that its operation will not contribute significantly to the area's existing ozone and PM10 problem. The residential EMF exposure of current health concern would not occur during operations.

### **RECOMMENDATIONS**

Since the project's operations would be unlikely to affect the health status of the area residents with respect to cancer or non-cancer effects, staff recommends certification with respect to the potential for significant health impacts. No Public Health Conditions of Certification are proposed.

## REFERENCES

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California Air Resources Board (ARB) 1996. California Toxic Emissions Factors (CATEF) Database for Natural Gas-Fired Combustion Turbine Cogeneration.

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El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.

# WORKER SAFETY AND FIRE PROTECTION

Testimony of Rick Tyler

## INTRODUCTION

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The statutory authority and requirements for worker and fire protection are set forth in laws, ordinances, regulations, and standards (LORS), and enforced through Federal, State, and local regulations. The effective implementation of worker safety programs at a facility is critical to the protection of workers. Project specific programs are documented in worker safety plans. Workers at the proposed facility will operate process equipment and handle hazardous materials, and may face other workplace hazards that can result in accidents, serious injury or even death. The worker safety and fire protection measures proposed for this project are designed to either eliminate or minimize such hazards through special training, protective equipment, and procedural controls.

The purpose of this analysis is to assess the adequacy of worker safety and fire protection measures proposed by El Paso for the United Golden Gate Power Project (UGGPP). Staff has reviewed the Application for Certification (AFC) submitted in September, 2000, to determine whether El Paso has proposed adequate measures to:

- comply with applicable safety laws, ordinances, regulations and standards;
- protect the workers during construction and operation of the facility;
- protect against fire; and
- provide adequate emergency response procedures.

Staff has determined that the features of the proposed project, in association with the proposed worker safety plans and procedures, will comply with applicable LORS and minimize the exposure of workers to industrial accidents or hazards. However, issues relating to the project's impacts to local fire protection service capabilities and appropriate mitigation have not yet been completely resolved but are addressed through the proposed condition of certification Worker Safety-3.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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### FEDERAL

In December 1970 Congress enacted Public Law 91-596, the Federal Occupational Safety and Health Act of 1970 (the Act). The Act mandates safety requirements in the workplace (29 U.S.C. §§ 651 through 678). This public law is codified under General Industry Standards, (29 CFR Part 1910.1 - 1910.1450) and clearly defines the procedures for promulgating regulations and conducting inspections to implement and enforce safety and health procedures to protect workers, particularly in the industrial sector. Most of the safety and health standards now in force under the Act for general industry represent a compilation of materials authorized by the

Act from existing federal standards and national consensus standards. These include standards from the voluntary membership organizations of the American National Standards Institute (ANSI), and the National Fire Protection Association (NFPA) which publishes the National Fire Codes.

The congressional purpose of the Act is to “assure so far as possible every working man and woman in the nation safe and healthful working conditions and to preserve our human resources,” (29 USC § 651). The Federal Department of Labor promulgates and enforces safety and health standards that are applicable to all businesses affecting interstate commerce. The Department of Labor established the Occupational Safety and Health Administration (OSHA) in 1971 to discharge the responsibilities assigned by the Act.

Applicable Federal requirements include:

- 29 U.S. Code § 651 et seq. (Occupational Safety and Health Act of 1970);
- 29 CFR Part 1910.1-1910.1450 (Occupational Safety and Health Administration Safety and Health Regulations); and
- 29 CFR Part 1952.170-1952.175 (Federal approval of California’s plan for enforcement of its own Safety and Health requirements, in lieu of most of the Federal requirements found in 29 CFR Part 1910.1-1910.1500).

## STATE

California’s Occupational Safety and Health Act of 1973 (Cal/OSHA) is published in the California Labor Code sections 6300 et seq. Regulations promulgated as a result of the Act are codified at Title 8 of the California Code of Regulations, beginning with Part 450. The California Labor Code requires that the State Standards Board must adopt standards at least as effective as the federal standards, that have been promulgated (Labor Code §142.3(a)). Health and Safety laws meet or exceed the Federal requirements. Hence, California obtained federal approval of its State health and safety regulations in lieu of the federal requirements published at 29 CFR Parts 1910.1 - 1910.1500. The Federal Secretary of Labor, however, continually oversees California’s program and will enforce any federal standard for which the State has not adopted a Cal/OSHA counterpart.

The State of California Department of Industrial Relations is charged with the responsibility for administering the Cal/OSHA plan. The Department of Industrial Relations is further split into six divisions to oversee, among other activities: industrial accidents, occupational safety and health, labor standards enforcement, statistics and research, and the State Compensation Insurance Fund (workers compensation).

Employers are responsible for insure that their employees are informed about workplace hazards, potential exposure and the work environment (Labor Code § 6408). Cal/OSHA’s principal tool in ensuring that workers and the public are informed about hazardous materials is the Material Safety Data Sheet (MSDS) (8 CCR § 5194). This regulation was promulgated in response to California’s Hazardous Substances Information and Training Act of 1990 ( § 874 and Labor

Code §§ 6360-6399.7). It mirrored the Federal Hazard Communication Standard (29 CFR Part 1910.1200) which established an employee's "right to know" about chemical hazards in the workplace.

Finally, California Senate Bill 198 requires that employers establish and maintain a written Injury and Illness Prevention Program to identify workplace hazards and communicate them to its employees through a formal employee-training program (8 CCR § 3203).

Applicable State requirements include:

- 8 CCR § 339 - List of hazardous chemicals relating to the Hazardous Substance Information and Training Act;
- 8 CCR § 450, et seq. - Cal/OSHA regulations;
- 24 CCR § 3, et seq. - incorporates the current edition of the Uniform Building Code;
- Health and Safety Code § 25500, et seq. - Risk Management Plan requirements for threshold quantity of listed acutely hazardous materials at the facility; and
- Health and Safety Code § 255000 - 25541 - Hazardous Material Business Plan detailing emergency response plans for hazardous materials emergency at the facility.

## **LOCAL**

The California Building Standards Code published at Title 24 of the California Code of Regulations, (24 CCR § 3, et seq.) is consists of eleven parts containing the building design and construction requirements relating to fire and life safety and structural safety. The Building Standards Code includes the electrical, mechanical, energy, and fire codes applicable to the project. Local planning /building & safety departments enforce the California Uniform Building Code.

National Fire Protection Association (NFPA) standards are published in the California Fire Code. The fire code contains general provisions for fire safety, including but not restricted to: 1) required road and building access; 2) water supplies; 3) installation of fire protection and life safety systems; 4) fire-resistive construction; 5) general fire safety precautions; 6) storage of combustible materials; 7) exits and emergency escapes; and 8) fire alarm systems. The California Fire Code is published at Part 9 of Title 24 of the California Code of Regulations.

Similarly the Uniform Fire Code Standards, a companion publication to the California Fire Code, contains standards of the American Society for Testing and Materials and the NFPA. It is the United State's premier model fire code. It is updated annually as a supplement and published every third year by the International Fire Code Institute to include all approved code changes in a new edition.

Applicable local requirements include:

- 1998 Edition of California Fire Code and all applicable NFPA standards (24 CCR Part 9);
- Uniform Fire Code Standards; and
- California Building Code Title 24, California Code of Regulations Part 3, et seq.

## **SETTING**

El Paso proposes to develop a natural gas-fueled power plant at the San Francisco International Airport. The San Francisco International Airport, San Mateo, and San Bruno Fire Departments would respond to serious incidents at the proposed facility. The nearest fire station is San Francisco Fire Department (SFFD), Airport Division, Station 1. The response time from this station is approximately 2 minutes. This Station has first responder hazardous materials (HAZMAT) capabilities. In that respect, they are individuals who initially respond to releases or potential releases of hazardous substances for the purpose of protecting nearby persons, property and the environment from the effects of the release (reference Title 29, Code of Federal Regulations 1910.120).

In the event of a sustained hazardous materials release, the SFFD HAZMAT Response Team would provide support. The response time to the UGGPP for this team is about 25 minutes.

## **IMPACTS**

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### **PROJECT SPECIFIC IMPACTS**

#### ***FIRE PROTECTION***

Staff reviewed the information provided in the AFC regarding available fire protection services and equipment (El Paso 2000a, AFC Section 5.17.5, Fire Protection) and contacted the SFFD to determine if project specific fire protection measures and equipment are adequate. Staff also evaluated the potential for impact on local fire protection and emergency response services. The project will rely on both on-site fire protection systems and the SFFD for fire protection and emergency response services.

The information provided in the AFC indicates that the proposed fire protection system at the site will be adequate for fighting incipient fires. The proposed fire protection system at the site includes fire alarms, detection systems, fire hydrants, and hose stations throughout the facility. Fixed fire suppression systems will be installed at pre-determined fire risk areas, such as the transformers and turbine lubrication oil equipment. The system will be designed and operated in accordance with National Fire Protection Association (NFPA) standards and recommendations. Hand-held fire extinguishers will be located in accordance with NFPA 10 throughout the facility.



The applicant will be required to provide final diagrams and plans to staff and to the SFFD prior to construction and operation of the project, to confirm the adequacy of the proposed fire protection measures. All Fire Department access roads, water mains, and fire hydrants shall be installed and operational during construction in accordance with Article 87 of the Fire Code. A final inspection by the Fire Department will be required to confirm that the facility meets all the Fire and Building Code requirements as a condition of the Building Permit.

A major fire, hazardous material release, or emergency rescue would require the services of the local Fire department. The SFFD has expressed concern that they will need additional equipment and personnel in order to provide effective services to the proposed UGGPP facility. The SFFD is currently evaluating the specific needs and will provide a more detailed specification of needs in the near future.

Staff recommends that the costs for such equipment and personnel be provided in advance by El Paso and reimbursed through reduction in future local tax payments. Staff proposes a condition of certification **WORKER SAFETY-3** to assure that the UGPP impacts to the Fire Department's fire and emergency service capabilities will be mitigated in this manner.

## **WORKER SAFETY**

Industrial environments are potentially dangerous. Workers could be exposed to chemical spills, hazardous waste, fires, moving equipment, and confined space entry and egress problems. It is important that El Paso develop well-defined policies and procedures, training, and hazard recognition and control at their facility to minimize such hazards and protect workers as described below in the mitigation section of this analysis.

During construction and operation of the MEC facilities, there is the potential for both incipient (small) fires, accidental releases of flammable gasses or liquids, or emergency response incidents. Electrical sparks, combustion of fuel oil, natural gas or flammable liquids, and over-heated equipment, may cause incipient fires. Although unlikely, larger fires could develop from uncontrolled incipient fires, or from accidental releases of natural gas or other flammable gasses or liquids.

## **CUMULATIVE IMPACTS**

The worker safety and fire hazards associated with the proposed construction and operation of the UGGPP, may result in a significant cumulative impact on the fire protection and emergency service capabilities of the SFFD. Please refer to the discussion above and conditions of certification **Worker Safety-3**.

## **MITIGATION**

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### **MITIGATION OF DIRECT IMPACTS**

A Safety and Health Program will be prepared by the applicant to minimize worker hazards during construction and operation. Staff uses the phrase "Safety and

Health Program” to refer to the measures that will be taken to ensure compliance with the applicable LORS during the construction and operational phases of the project.

## **CONSTRUCTION SAFETY AND HEALTH PROGRAM**

The UGGPP includes construction and operation of a natural gas-fired combustion turbine generating station. During the construction phase of the project, workers will be exposed to hazards typical of constructing large industrial facilities.

Construction Safety Orders are published in Title 8 of the California Code of Regulations beginning with section 1502. These requirements are promulgated by Cal/OSHA and are applicable to the construction phase of the project. The Construction Safety and Health Program will include the following:

- Construction Injury and Illness Prevention Program (8 CCR § 1509)
- Construction Fire Protection and Prevention Plan (8 CCR § 1920)
- Personal Protective Equipment Program (8 CCR §§ 1514-1522)

Additional programs required under General Industry Safety Orders (8 CCR §§ 3200-6184), Electrical Safety Orders (8 CCR §§2299-2974) and Unfired Pressure Vessel Safety Orders ( 8 CCR §§ 450-544) include:

- Electrical Safety Program;
- Unfired Pressure Vessel Safety Orders;
- Equipment Safety Program;
- Forklift Operation Program;
- Excavation/Trenching Program;
- Fall Prevention Program;
- Scaffolding/Ladder Safety Program;
- Articulating Boom Platforms Program;
- Crane and Material Handling Program;
- Housekeeping and Material Handling and Storage Program;
- Hot Work Safety Program;
- Respiratory Protection Program;
- Employee Exposure Monitoring Program;
- Confined Space Entry Program;
- Hand and Portable Power Tool Safety Program;
- Hearing Conservation Program;
- Back Injury Prevention Program;
- Hazard Communication Program;

- Air Monitoring Program;
- Heat and Cold Stress Monitoring and Control Program; and
- Pressure Vessel and Pipeline Safety Program.

The AFC includes adequate outlines of each of the above programs (El Paso 2000a, AFC section 5.17). Prior to construction of the UGGPP, detailed programs and plans will be provided pursuant to the condition of certification **WORKER SAFETY-1**.

## **OPERATION SAFETY AND HEALTH PROGRAM**

Upon completion of construction and prior to operations of the UGGPP, the Operations Safety and Health Program will be prepared and implemented pursuant to regulatory requirements of Title 8 of the California Code of Regulations. The UGGPP's Operation Safety and Health Program will include the following programs and plans:

- Injury and Illness Prevention Program (8 CCR § 3203);
- Emergency Action Program/Plan (8 CCR § 3220);
- Fire Protection and Prevention Program (8 CCR § 3221); and
- Personal Protective Equipment Program (8 CCR §§ 3401-3411).

Additional programs under General Industry Safety Orders (8 CCR §§ 3200-6184), Electrical Safety Orders (8 CCR §§ 2299-2974) and Unfired Pressure Vessel Safety Orders (8 CCR §§ 450-544) include:

- Motor Vehicle and Heavy Equipment Safety Program;
- Forklift Operation Program;
- Excavation/Trenching Program;
- Fall Protection Program;
- Scaffolding/Ladder Safety Program;
- Crane and Material Handling Program;
- Hazard Communication Program;
- Hot Work Safety Program;
- Respiratory Protection Program;
- Electrical Safety Program;
- Confined Space Entry Program;
- Hand and Portable Power Tool Safety Program;
- Housekeeping and Material Handling and Storage Program;
- Hearing Conservation Program;
- Back Injury Prevention Program;

- Safe Driving Program;
- Employee Exposure Monitoring Program;
- Heat and Cold Stress Monitoring and Control Program; and
- Pressure Vessel and Pipeline Safety Program.

The AFC includes adequate outlines of each of the above programs. Prior to operation of the proposed UGGPP, detailed programs and plans will be provided pursuant to the condition of certification **WORKER SAFETY-2**.

## **SAFETY AND HEALTH PROGRAM ELEMENTS**

EL Paso provided the proposed outlines for both a Construction Safety and Health Program and an Operation Safety and Health Program. The measures in these plans are derived from applicable sections of state and federal law. The major item required in both Safety and Health Programs the Injury and Illness Prevention Program (IIPP).

EL Paso will submit a detailed Construction and Operations Illness and Injury Prevention Programs to Cal/OSHA for review and comment 30 days prior to both construction and operation of the project. The IIPP will include the following components:

- Responsible personnel
- Safety and health policy
- Work rules and safe work practices
- System for ensuring that employee compliance with safe work practices
- Employee communications
- Identification and evaluation of workplace hazards
- Methods and/or procedures for correcting unsafe or unhealthy conditions, practices, or procedures in a timely manner based upon severity of the hazards
- Specific safety procedures (included in Operations Safety and Health Program)
- Training and instruction

Cal/OSHA will review and provide comments on the IIPP as the result of an onsite consultation with El Paso. A Cal/OSHA representative will complete a physical survey of the site, analyze work practices, and assess those practices that could result in illness or injury. This on-site consultation will give Cal/OSHA an opportunity to evaluate El Paso's IIPP in conjunction with the activities occurring on site.

## ***EMERGENCY ACTION PLAN***

California regulations require an Emergency Action Plan (8 CCR § 3220). The AFC contains a satisfactory outline for an emergency action plan. The outline lists the following features:

- Emergency escape procedures and emergency escape route assignments
- Procedures to be followed by employees who remain to operate critical plant operations before they evacuate
- Procedures to account for all employees after emergency evacuation has been completed
- Rescue and medical duties for employees
- Fire and emergency reporting procedures
- Alarm and communication system
- Contact personnel
- Response procedures for ammonia release
- Training requirements

Staff proposes a condition of certification **WORKER SAFETY-2**, that requires El Paso to submit a final Operation Emergency Action Plan to Cal/OSHA for review and comment after an on-site consultation. It also requires that El Paso submit the final Operation Emergency Action Plan to the San Francisco Fire Department for review and approval.

#### **FIRE PREVENTION PLAN**

California Code of Regulations requires Construction and Operation Fire Prevention Plans (8 CCR § 1920 and 3221). The AFC contains a draft proposed fire prevention plan which is acceptable to staff. The Construction and Operation Fire Prevention Plans, which are required to be developed by staff's recommended conditions of certification **WORKER SAFETY-1 AND -2**, will need to include the following topics:

- General requirements
- Fire hazard inventory, including ignition sources and mitigation
- Housekeeping and proper materials storage
- Employee alarm/communication system
- Portable fire extinguishers
- Fixed firefighting equipment
- Fire control
- Flammable and combustible liquid storage
- Use of flammable and combustible liquids
- Dispensing and disposal of liquids
- Training
- Contact personnel
- Local fire protection services

The conditions of certification also require El Paso to submit a copy of the Construction and Operations Fire Prevention Plans to the California Energy

Commission compliance Project Manager (CPM) and the SFFD for review and approval.

## **PERSONAL PROTECTIVE EQUIPMENT PROGRAM**

California regulations stipulate that Personal Protective Equipment (PPE) and first aid supplies are required whenever hazards are encountered which, due to process, environment, chemicals or mechanical irritants can cause injury or impair bodily function, as a result of absorption, inhalation or physical contact (8 CCR § 3380-3400). Operation of the UGGPP will require preparation and implementation of a PPE.

The PPE Program ensures that employers comply with the applicable requirements for PPE and provide employees with the information and training necessary to implement the program. El Paso provided a satisfactory description that identifies minimum requirements of a proposed PPE program. The components of the UGGPP program include:

- Hazard analysis and prescription of PPE
- Personal protective devices
- Head protection
- Eye and face protection
- Body protection
- Hand protection
- Foot protection
- Skin protection
- Sanitation
- Safety belts and lifelines for fall protection
- Protection for electric shock
- Medical services and first aid/ bloodborne pathogens
- Respiratory protective equipment
- Hearing protection
- Training

Staff evaluated El Paso's description and assessed that the proposed PPE Program contains the elements that will meet applicable regulations and will significantly reduce the potential impact upon workers.

## **GENERAL SAFETY**

In addition to the specific plans listed above, there are additional requirements applicable to the project, which are called "safe work practices". Both the Construction and the Operations Safety Programs will address safe work practices

under a variety of programs. The components of these programs are presented in the following paragraphs.

#### **MOTOR VEHICLE AND HEAVY EQUIPMENT SAFETY PROGRAM**

This program concerns the operation and maintenance of vehicles, inspections, personal protective equipment and traffic safety training for employees working on, near, or with heavy equipment or vehicles. A safe driving training program will be included in the operations safety program.

#### **FORKLIFT OPERATION PROGRAM**

Forklift operation will utilize only trained and certified operators. The training program will include safe fueling procedures and forklift driving.

#### **EXCAVATION/TRENCHING PROGRAM**

A Cal/OSHA permit is required for certain trenches, excavations, structures, scaffolding and dismantling. El Paso's program will include:

- Shoring, sloping, and benching requirements
- Cal/OSHA permit requirements
- Inspection
- Air monitoring
- Access and egress

#### **FALL PROTECTION PROGRAM**

Worker training will identify fall hazards and evaluate the appropriate protection devices, such as safety harnesses.

#### **SCAFFOLDING / LADDER SAFETY PROGRAM**

Workers will be trained in the construction, inspection and proper use of ladder and scaffolding equipment, and the appropriate safety and protective equipment to use.

#### **ARTICULATING BOOM PLATFORMS PROGRAM**

This program consists of:

- Inspection of equipment
- Load ratings
- Safe operating parameters
- Operator training

#### **CRANE AND MATERIAL HANDLING PROGRAM**

Only certified and licensed operators will be permitted to operate crane. Worker training will include:

- Inspection of equipment

- Load ratings
- Safe operating parameters

### **HOT WORK SAFETY PROGRAM**

Hot work is that which causes a spark and can ignite a fuel source, such as welding, cutting and brazing. Before proceeding with hot work, workers will request a work authorization for the project's assigned Safety Officer. The control operator, shift supervisor will determine if hot work is required. Before proceeding, the area will be inspected and the job posted. El Paso's proposed Hot Work Safety Program will include:

- Welding and cutting procedures
- Fire watch
- Hot work permit
- Personnel protective equipment
- Training

### **EMPLOYEE EXPOSURE MONITORING PROGRAM**

Routine medical surveillance will be conducted on workers to evaluate and monitor individual exposure to hazardous conditions or substances. This program includes:

- Exposure evaluation
- Monitoring and reporting requirements
- Medical surveillance
- Training

### **ELECTRICAL SAFETY PROGRAM**

El Paso's Electrical Safety Program will include procedures for grounding, lock-out/tag-out, overhead and underground utilities, utility clearance and employee training. Lock-out/tag-out requirements are specified under Title 8 of the California Code of Regulations (8 CCR Sections 2320.4, 2320.5, 2320.6, 2530.43, 2530.86, 3314, 3340 and 3341). These procedures reduce employee exposure to moving equipment, electrical shock, and hazardous and toxic materials. Lock-out is the placement of a padlock, blank flange, or similar device on equipment to ensure it will not be operated until the lock-out device is removed. Tag-out procedures utilize warning signs that caution personnel when equipment can not be energized until the lock-out device is removed. Warning signs are used to alert employees to the presence of hazardous and toxic materials. El Paso's lock-out/tag-out program will include steps for applying and removing locks and tags, and employee training procedures.

### **CONFINED SPACE ENTRY**

The California Code of Regulations identifies the minimal standards for preventing employee exposure to dangerous air contaminants and/or oxygen deficiency in



confined spaces, where there is an oxygen-deficient atmosphere, a limited means of egress, or a source of toxic or flammable contaminants (8 CCR Sections 5156-5168). Confined spaces include silos, tanks, vats, vessels, boilers, compartments, ducts, sewers, pipelines, vaults, bins and pits. El Paso included a description of their permit-required confined space entry program, which includes the following components:

- Air monitoring and ventilation requirements
- Rescue procedures
- Lock-out / tag-out and blocking, blinding, and blanking requirements
- Permit completion
- Training

Before entering a confined space, site personnel will evacuate or purge the space and disconnect the lines that provide access of substances into the space. The air in the vessel will be tested for oxygen deficiency, and the presence of toxic and explosive gases and vapors. Employees will wear lifelines or safety harnesses when entering the confined space, and a person will be stationed outside the confined space to handle the line and summon assistance in case of emergency. Appropriate respirators will be available under hazardous conditions.

#### **HAND AND PORTABLE POWER TOOL SAFETY PROGRAM**

This program applies to construction and operations. It will include guarding and proper operations of power tools and worker training.

#### **HOUSEKEEPING AND MATERIAL HANDLING AND STORAGE PROGRAM**

This program concerns storage requirements and proper handling of equipment, and keeping walkways and work surfaces clean and safe. Worker training includes good housekeeping practices.

#### **HEARING CONSERVATION PROGRAM**

This program identifies high-noise environments and assigns hearing protective devices appropriate to the noise level. Although hearing protection is included in personal protective equipment, this program includes exposure monitoring and medical surveillance, along with worker training.

#### **BACK INJURY PREVENTION PROGRAM**

Worker training in this program will consider proper lifting practices and material handling procedures.

#### **HAZARD COMMUNICATION PROGRAM**

The Hazard Communications Standard establishes an employee's right to know about chemical hazards in the workplace. In accordance with federal and State requirements, El Paso will prepare a list of hazardous substances and provide a Material Safety Data Sheet (MSDS) for each substance on the list found in the

workplace. El Paso will train workers to understand MSDS and to work safely with hazardous substances. Worker training in this program will also include proper labeling, storage and handling of hazardous materials.

#### **RESPIRATORY PROTECTION PROGRAM**

Respiratory protection is also incorporated in the personal protective equipment. This program includes:

- Proper selection and use of a respirator
- Fit testing
- Medical requirements
- Inspection, repair, cleaning and storage of respirator
- Training

#### **HEAT AND COLD STRESS MONITORING AND CONTROL PROGRAM**

This program includes monitoring, prevention and control for workers in hot or cold environments.

#### **PRESSURE VESSEL AND PIPELINE SAFETY PROGRAM**

Workers at pressure vessels and pipelines will be trained in the following procedures:

- Line-breaking policy
- Equipment inspection and maintenance
- Blocking , bleeding, and blanking
- Communication

#### **MITIGATION OF CUMULATIVE IMPACTS**

The worker safety protection programs proposed by El Paso will be applicable to the construction and operation of the UGGPP facility and will provide adequate protection for workers at that facility. Staff's recommended condition of certification WORKER SAFETY-3 will ensure that the UGGPP contribution to cumulative impacts to the Fire Department's fire protection and emergency service capabilities will be adequately mitigated.

#### **FACILITY CLOSURE**

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The project owner/operator is responsible for maintaining an operational fire protection system during closure activities. The project must also stay in compliance with all applicable health and safety LORS during that time.

## CONCLUSIONS AND RECOMMENDATIONS

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### CONCLUSIONS

If El Paso provides: (1) a Construction Safety and Health Plan, and an Operation Safety and Health Plan, as required by conditions of certification **WORKER SAFETY-1** and **-2**; and (2) funding for additional fire protection services capabilities as required in condition of certification **WORKER SAFETY-3**, staff believes that the project will incorporate measures to ensure adequate worker and fire protection. Staff also believes that with such measures the UGGPP will comply with applicable LORS.

### RECOMMENDATIONS

If the Commission certifies the project, staff recommends that the Commission adopt the following proposed conditions of certification. The proposed conditions of certification provide assurance that the project Construction and Operation Safety and Health Programs proposed by the project owners will be reviewed by the appropriate agencies before implementation. The conditions also require verification that the proposed plans adequately assure worker safety and fire protection and comply with applicable LORS.

### PROPOSED CONDITIONS OF CERTIFICATION

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**WORKER SAFETY-1** The project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program, containing the following:

- a construction Injury and Illness Prevention Program
- a construction Fire Protection and Prevention Plan
- a personal Protective Equipment Program

Protocol: The Construction Injury and Illness Prevention Program and the Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service, for review and comment concerning compliance of the program with all applicable Safety Orders.

The Construction Fire Protection and Prevention Plan shall be submitted to the SFFD for review and acceptance.

Verification: At least 30 days prior to the start of construction, or a date agreed to by the CPM, the project owner shall submit to the CPM a copy of the Project Construction Safety and Health Program and the Personal Protective Equipment Program, with a copy of the cover letter transmittal of the programs to Cal/OSHA Consultation Service. Prior to the start of construction, the project owner shall provide a letter from the SFFD stating that they have reviewed and accepted the Construction Fire Protection and Prevention Plan.

**WORKER SAFETY-2** The project owner shall submit to the CPM a copy of the Project Operation Safety and Health Program containing the following:

- an Operation Injury and Illness Prevention Plan
- an Emergency Action Plan
- an Operation Fire Protection Plan
- a Personal Protective Equipment Program

Protocol: The Operation Injury and Illness Prevention Plan, Emergency Action Plan, and Personal Protective Equipment Program shall be submitted to the California Department of Industrial Relations, Division of Occupational Safety and Health (Cal/OSHA) Consultation Service for review and comment concerning compliance of the program with all applicable Safety Orders. The operation's Emergency Action Plan and Fire Protection Plan shall be submitted to the SFFD for review and acceptance. The final versions of the operation Injury and Illness Prevention Plan, Emergency Action Plan, Fire Protection Plan and Personal Protective Equipment Program shall incorporate Cal/OSHA and SFFD comments that were received and accepted.

Verification: At least 30 days prior to the start of operation, the project owner shall submit to the CPM a copy of the final version of the Project Operation Safety & Health Program with a copy of the cover letter to Cal/OSHA's Consultation Service, and SFFD comments stating that they have reviewed and accepted the specified elements of the proposed Operation Safety and Health Plan.

The project owner shall notify the CPM that the Project Operation Safety and Health Program (Injury and Illness Prevention Plan, Fire Protection Plan, the Emergency Action Plan, and Personal Protective Equipment requirements), including all records and files on accidents and incidents, is present on-site and available for inspection.

**WORKER SAFETY-3** Prior to the start of construction, the project owner shall reach an agreement with the SFFD regarding the amount and payment of fees for project-specific impacts associated with worker safety and fire protection.

If an agreement cannot be reached prior to construction, the project owner shall inform the CPM and propose a plan to mitigate impacts on fire services. The plan shall include:

- a. A funding proposal for equipment and staffing necessary to provide effective fire protection and hazardous materials incident response.
- b. A fee schedule for reimbursement of fees paid by the project owner.  
Recompense may be made through a reduction in local property taxes.

Verification: Not later than 30 days prior to operation, the project owner shall provide the CPM with a copy of the agreement between SFFD and the project owner relative to the agreed-upon fees and payment for equipment and/or staffing.

If an agreement cannot be reached at least 30 days prior to operation, the project owner, in consultation with the CPM, shall draft an interim agreement (between SFFD and the project owner) which will remain in effect until a permanent agreement can be reached.

## REFERENCES

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# HAZARDOUS MATERIALS MANAGEMENT

Testimony of Rick Tyler

## INTRODUCTION

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The purpose of this analysis is to determine if the proposed Phase I of the United Golden Gate Power Project (UGGPP) will result in the potential for a significant impact on the public resulting from the use, handling or storage of hazardous materials at the proposed facility. If significant adverse impacts on the public are identified, Energy Commission staff must also evaluate the potential for facility design alternatives and additional mitigation measures to reduce impacts to the extent feasible.

This analysis does not address potential exposure of workers to hazardous materials used at the proposed facility. Employers must inform employees of hazards associated with their work and thus employees, in exchange for compensation, accept a higher level of risk than would be acceptable for general public exposure. Workers are therefore not afforded the same level of protection normally provided to the public. Further, workers can be provided with special protective equipment and training to reduce the potential for health impacts associated with the handling of hazardous materials (see staff's **WORKER SAFETY AND FIRE PROTECTION** section).

The only process associated with the UGGPP Project that requires the use of reportable quantities of a hazardous material is the Selective Catalytic Reduction (SCR) process that may be required to control NO<sub>x</sub> emissions. This pollution control measure requires the use of ammonia. The project developer El Paso Merchant Energy Company (El Paso) (El Paso 2000a) has chosen to use aqueous ammonia that significantly reduces the risk otherwise associated with using the more hazardous anhydrous form of ammonia. Use of the aqueous form eliminates the high internal energy associated with the more hazardous anhydrous form, which is stored as a liquefied gas at elevated pressure. The high internal energy associated with the anhydrous form of ammonia acts as a driving force in an accidental releases that rapidly introduces large quantities of the material to the ambient air, where it can be transported in the atmosphere typically resulting in high down-wind concentrations at considerable distances. Spills associated with the aqueous form are also much easier to contain than those associated with the anhydrous form. In addition, relatively slow mass transfer from the free surface of the spilled aqueous solution limits emissions from a spill of aqueous ammonia. El Paso has also chosen to use a 19 percent aqueous ammonia solution as opposed to the more commonly used 29 percent solution. This further reduces the potential for impact in an accidental release by reducing the vapor pressure of the spilled material. Analysis of the potential for impact associated with aqueous ammonia deliveries is addressed in staff's **TRAFFIC AND TRANSPORTATION** section.

Other hazardous materials stored in smaller quantities, such as mineral and lubricating oils, corrosion inhibitors and water conditioners, will be present at the proposed facility. However, these materials pose little or no significant potential for

off-site impacts as a result of the quantities on site, their relatively low toxicity, and/or their low environmental mobility. Although no natural gas is stored, the project will also involve the construction and operation of short natural gas pipeline connections and handling of large amounts of natural gas. Natural gas poses some risk of both fire and explosion.

## **LAWS, ORDINANCES, REGULATIONS, STANDARDS AND POLICIES**

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The following federal, state, and local laws and policies generally apply to the protection of public health and hazardous materials management. Staff's analysis examines the project's compliance with these requirements.

### **FEDERAL**

The Superfund Amendments and Reauthorization Act of 1986 (SARA) Title III and Clean Air Act of 1990 established a nationwide emergency planning and response program and imposed reporting requirements for businesses which store, handle, or produce significant quantities of extremely hazardous materials. The Act (codified in 40 C. F. R., § 68.110 et seq.) requires the states to implement a comprehensive system to inform local agencies and the public when a significant quantity of such materials is stored or handled at a facility. The requirements of these Acts are reflected in the California Health and Safety Code, section 25531 et seq.

### **STATE**

The California Health and Safety Code, section 25534, directs facility owners, storing or handling acutely hazardous materials in reportable quantities, to develop a Risk Management Plan (RMP) and submit it to appropriate local authorities, the United States Environmental Protection Agency (EPA), and the designated local Administering Agency for review and approval. The plan must include an evaluation of the potential impacts associated with an accidental release, the likelihood of an accidental release occurring, the magnitude of potential human exposure, any preexisting evaluations or studies of the material, the likelihood of the substance being handled in the manner indicated, and the accident history of the material. This new, recently developed program supersedes the California Risk Management and Prevention Plan (RMPP).

Title 8, California Code of Regulations, Section 5189, requires facility owners to develop and implement effective safety management plans to insure that large quantities of hazardous materials are handled safely. While such requirements primarily provide for the protection of workers, they also indirectly improve public safety and are coordinated with the RMP process.

Title 8, California Code of Regulations, Section 458 and Sections 500 to 515, set forth requirements for design, construction and operation of vessels and equipment used to store and transfer anhydrous ammonia. These sections generally codify the requirements of several industry codes, including the ASME Pressure Vessel Code, ANSI K61.1 and the National Boiler and Pressure Vessel Inspection Code. While these codes apply to anhydrous ammonia, they may also be used to design storage facilities for aqueous ammonia.



California Health and Safety Code, section 41700, requires that “No person shall discharge from any source whatsoever such quantities of air contaminants or other material which causes injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which endanger the comfort, repose, health, or safety of any such persons or the public, or which cause, or have a natural tendency to cause injury or damage to business or property.”

## **LOCAL AND REGIONAL**

The Uniform Fire Code (UFC) contains provisions regarding the storage and handling of hazardous materials. These provisions are contained in Articles 79 and 80. The latest revision to Article 80 was in 1997 (UFC 1997). These articles contain minimum setback requirements for outdoor storage of ammonia.

The California Building Code contains requirements regarding the storage and handling of hazardous materials. The Chief Building Official must inspect and verify compliance with these requirements prior to issuance of an occupancy permit. A further discussion of these requirements is provided in the **FACILITY DESIGN** section of this document.

## **SETTING**

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### **SITE AND VICINITY DESCRIPTION**

Several factors associated with the area in which a project is to be located affect its potential to cause public health impacts from an accidental release of a hazardous material. These include:

- The local meteorology,
- Terrain characteristics, and
- The location of population centers and sensitive receptors relative to the project.

Staff considered these factors, as discussed below, in assessing the potential public health impacts of the project.

### ***METEOROLOGICAL CONDITIONS***

Meteorological conditions, including wind speed, wind direction and air temperature, affect the extent to which accidentally released hazardous materials would be dispersed into the air and the direction in which they would be transported. This affects the level of public exposure to such materials and the associated health risks. When wind speeds are low and stable, dispersion is severely reduced and can lead to increased localized public exposure.

The worst case release Scenario modeled for the UGGPP as described in the AFC (El Paso 2000a) reflects the most pessimistic meteorological condition recorded in the project area. This produces an upper bound estimate of worst case impacts. This modeling assumed F stability (i.e., stagnated air, very little mixing), one meter/second wind speed and an ambient temperature of 100° F to reflect worst

case atmospheric conditions. Staff concurs with this analysis based on site specific meteorological data provided in the Application For Certification.

### ***TERRAIN CHARACTERISTICS***

The location of elevated terrain (terrain above the power plant stack height) is often an important factor to be considered in assessing potential exposure. An emission plume resulting from an accidental release may impact high elevations before impacting lower elevations. The principal risk of accidental release at this facility is associated with aqueous ammonia. However, modeling of an accidental release of aqueous ammonia indicates that significant concentrations would be confined to the immediate project area. No elevated terrain exists in this area.

### ***LOCATION OF EXPOSED POPULATIONS AND SENSITIVE RECEPTORS***

The general population includes many sensitive subgroups that may be at greater risk from exposure to emitted pollutants. These sensitive subgroups include the very young, the elderly, and those with existing illnesses (Calabrese 1978). Also, the location of the population in the area surrounding a project site may have a large bearing on health risk. The UGGPP is located in a sparsely populated industrial area at the San Francisco International Airport. However, a homeless shelter was recently completed in close proximity to the project. The proposed project is also in close proximity to existing United Airlines facilities.

## **IMPACTS**

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The Energy Commission staff has determined that aqueous ammonia and natural gas are the only hazardous materials to be handled that pose a risk of off-site impacts. The following is a project specific analysis of the potential impacts associated with the handling of each of these materials.

### **AQUEOUS AMMONIA**

Aqueous ammonia will be used in controlling the emission of oxides of nitrogen (NO<sub>x</sub>) from the combustion of natural gas in the facility. The accidental release of aqueous ammonia without proper mitigation can result in hazardous down-wind concentrations of ammonia gas.

To assess the potential impacts associated with an accidental release of ammonia, staff typically evaluates where four "bench mark" exposure levels of ammonia gas occur off-site. These include: 1) the lowest concentration posing a risk of lethality, 2,000 parts per million; 2) the Immediately Dangerous to Life and Health (IDLH) level of 300 ppm; 3) the Emergency Response Planning Guideline (ERPG) level 2 of 200 ppm, which is also the RMP level 1 criterion used by EPA and California; and 4) the level considered by the Energy Commission staff to be without serious adverse effects on the public for a one-time exposure of 75 ppm. (A detailed discussion of the exposure criteria considered by staff and their applicability to different populations and exposure-specific conditions is provided in Appendix A of this analysis.) If the exposure associated with a potential release would exceed 75 ppm at any public receptor, staff will presume that the potential release poses a risk

of significant impact. However, staff may also assess the probability of occurrence of the release and/or the nature of the potentially exposed population. Staff may, based on such analysis, determine that the likelihood and extent of potential exposure are not sufficient to support a finding of potentially significant impact.

Section 5.17 of the AFC included a discussion of the results of modeling for a worst case accidental release of aqueous ammonia. These results were based on a release from storage tank into the containment basin below the tank. However, Staff believes that the worst case release scenario would be associated with a postulated total release of the contents of a delivery vehicle during transfer of ammonia to the storage tank. In conducting this analysis, it was assumed that spilled material would be contained in the basin below the storage vessel and that winds of one meter per second and category F stability would exist at the time of the accidental release. This screening analysis was designed to predict the maximum possible impacts based on distance from the storage tank without regard to specific direction of transport. Staff evaluated the model used, the assumptions leading to model inputs, and the results of the modeling. Based on this staff concurs with the approach and the results. This analysis indicated that concentrations exceeding 200 ppm would be confined almost completely to the immediate project area extending to a distance of .1 miles. Staff believes that these results are valid only if a catchment basin is provided between the delivery vehicle and the storage facility. Staff is also concerned that potential exposures in an accidental release could exceed 75 ppm at the nearby homeless shelter which will house up to 90 people and at nearby United Airlines facilities. Staff has therefore, proposed a condition of certification (HAZ 5) requiring a catchment basin under the delivery vehicle and between the storage tank. Staff has also proposed that the catchment basins below the tank and under the delivery vehicle include surface cover reducing the effective surface area expose to the atmosphere by 90 percent. These measures will reduce all off-site concentrations in the event of an accidental release below 75 ppm.

## **NATURAL GAS**

Natural gas, which will be used as a fuel by the project, poses a fire and/or explosion risk as a result of its flammability. While natural gas will be used in significant quantities, it will not be stored on-site. The risk of a fire and/or explosion from natural gas can be reduced to insignificant levels through adherence to applicable codes and the development and implementation of effective safety management practices. The National Fire Protection Association (NFPA) Code 85A requires: 1) the use of double block and bleed valves for gas shut-off; 2) automated combustion controls; and 3) burner management systems. These measures will significantly reduce the likelihood of an explosion in gas fired equipment. Additionally, start-up procedures will require air purging of the gas turbines prior to start-up, thus precluding the presence of an explosive mixture.

## **CUMULATIVE IMPACTS**

As proposed, the facility will cause no significant risk of off-site impacts. Thus the direct impacts of the project will not add to any existing accidental release risks, so no cumulative impacts are possible.

## **FACILITY CLOSURE**

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The requirements for handling of hazardous materials remain in effect until such materials are removed from the site regardless of facility closure. Therefore, the facility owners are responsible for continuing to handle such materials in a safe manner, as required by applicable laws. In the event that the facility owner abandons the facility in a manner which poses a risk to surrounding populations, staff will coordinate with the California Office of Emergency Services, San Francisco City and County Public Health Department, and the California Department of Toxic Substances Control (DTSC) to ensure that any unacceptable risk to the public is eliminated. Funding for such emergency action can be provided by federal, state or local agencies until the cost can be recovered from the responsible parties (O.E.S. 1990).

## **MITIGATION**

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Staff has determined that with its proposed mitigation the UGGPP will not pose the potential for significant risk of public health impacts associated with accidental release of hazardous materials. In addition to those conditions proposed by El Paso, Staff also proposes a condition (Haz-5) requiring an additional catchment basin under the delivery area to protect against accidental releases during delivery of aqueous ammonia. The proposed conditions will also require that both the delivery and storage catchment basins be provided surface covers that reduce the effective surface area exposed to the atmosphere by 90%. The proposed conditions will also ensure that the facility will use only those materials proposed in the AFC and that the project will comply with applicable LORS.

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CONCLUSION**

Staff's evaluation of the proposed project (with staff's proposed mitigation measures) indicates that hazardous materials use will pose no potential for significant impacts on the public. With adoption of the proposed conditions of certification, the proposed project will comply with all applicable laws, ordinances, regulations and standards (LORS). In response to Health and Safety Code, section 25531 et seq., the applicant may be required to develop an RMP.<sup>1</sup> If an RMP is required it will be submitted to the Environmental Protection Agency (EPA), the San Francisco City and County Public Health Department, and Energy Commission staff for evaluation prior to ammonia delivery to the UGGPP. Staff's proposes a condition of certification that also requires San Francisco City and County Health Department's acceptance of the RMP and staff's approval of the RMP prior to delivery of aqueous ammonia to the facility. With adoption of staff's proposed conditions of certification, the project will also comply with Health and Safety Code,

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<sup>1</sup> At present, it appears unlikely that an RMP will be required.

section 41700, and it will not pose any potential for significant impacts to the public from hazardous materials releases.

## RECOMMENDATION

Staff recommends the Energy Commission impose the proposed conditions of certification, presented herein, to ensure that the project is designed, constructed and operated to comply with applicable LORS and to protect the public from significant risk of exposure to an accidental ammonia release.

## PROPOSED CONDITIONS OF CERTIFICATION

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**HAZ-1** The project owner shall not use any hazardous material in reportable quantities, as specified in Title 40, C. F.R. Part 355, Subpart J, section 355.50, not listed in Appendix B, below, or in greater quantities than those identified by chemical name in Appendix B, below, unless approved in advance by the CPM.

**Verification:** The project owner shall provide to the CPM, in the Annual Compliance Report, a list of hazardous materials contained at the facility in reportable quantities.

**HAZ-2** If required the project owner shall provide a Business Plan and Risk Management Plan to the San Francisco City and County Public Health Department and the CPM for review and approval. If required the RMP shall be submitted to the CPM at the time the RMP is first submitted to either the San Francisco City and County Public Health Department or the U.S. Environmental Protection Agency (EPA). The project owner shall reflect all recommendations of the San Francisco City and County Health Department and the CPM in the final document. A copy of the final RMP, reflecting all comments, shall be provided to both the San Francisco City and County Health Department and the CPM once it is deemed complete.

**Verification:** At least 60 days prior to handling reportable quantities of any hazardous material the owner shall provide a copy of a final Business Plan approved by the San Francisco City and County Public Health Department to the CPM. At least 60 days prior to delivery of aqueous ammonia to the UGGPP the owner shall provide the final RMP accepted by the San Francisco City and County Public Health Department, to the CPM for approval.

**HAZ-3** The project owner shall develop and implement a safety management plan for delivery of ammonia. The plan shall include procedures, protective equipment requirements, training and a checklist.

**Verification:** At least 60 days prior to the delivery of aqueous ammonia to the facility, the project owner shall provide a safety management plan as described above to the CPM for review and approval.

**HAZ-4** The aqueous ammonia storage tanks shall be constructed to specifications at least as protective as those in American Petroleum Institute (API) 620. The storage tank shall be double walled design or be within a secondary containment designed and operated to hold the volume of precipitation from a 24-hour, 25-year storm event plus 100 percent of the capacity of the largest tank within its boundary. It shall also have a surface cover providing at least 90% reduction of the surface area exposed to the atmosphere over any potentially spilled ammonia.

**Verification:** At least 60 days prior to delivery of aqueous ammonia to the site, the project owner shall submit final design drawings and specifications for the ammonia storage facility to the CPM for review and approval.

**HAZ-5** The aqueous ammonia delivery facilities shall be protected by catchment basins designed to hold 100 percent of the largest delivery vehicle used to deliver aqueous ammonia. This basin shall also have a surface cover reducing atmospheric exposure to any spilled ammonia by at least 90 percent.

**Verification:** At least 60 days prior to delivery of aqueous ammonia to the site the project owner shall submit final design drawings and specifications for the ammonia delivery facility to the CPM for review and approval.

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# HAZARDOUS MATERIAL MANAGEMENT

## Appendix A

### BASIS FOR STAFF'S USE OF 75 PPM AMMONIA EXPOSURE CRITERIA

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Staff uses a criterion of 75 ppm to evaluate the significance of impacts associated with potential accidental releases of ammonia. While this criterion is not consistent with the 200 ppm criterion used by EPA and Cal EPA in evaluating such releases pursuant to the Federal Risk Management Program and State Accidental Release Program, it is appropriate for use in staff's CEQA analysis. The Federal Risk Management Program and the State Accidental Release Program are administrative programs designed to address emergency planning and ensure that appropriate safety management practices are implemented and actions are taken in response to accidental releases. However, the regulations implementing these programs do not provide clear authority to require design changes or other major changes to a proposed facility. The preface to the Emergency Response Planning Guidelines (ERPGs) states that "these values have been derived as planning and emergency response guidelines, **not** exposure guidelines, they do not contain the safety factors normally incorporated into exposure guidelines. Instead they are estimates, by the committee, of the thresholds above which there would be an unacceptable likelihood of observing the defined effects." It is staff's contention that these values apply to healthy adult individuals and are levels that should not be used to evaluate the acceptability of avoidable exposures. While these guidelines are useful in decision making in the event that a release has already occurred (for example, prioritizing evacuations), they are not appropriate for and are not binding on discretionary decisions involving proposed facilities where many options for mitigation are feasible. CEQA requires permitting agencies making discretionary decisions to identify and mitigate potentially significant impacts through changes to the proposed project.

Staff has chosen to use the National Research Council's 30 minute Short Term Public Emergency Limits (STPELs) to determine the potential for significant impact. These limits are designed to apply to accidental unanticipated releases and subsequent public exposure. Exposure at these levels should not result in "serious sequelae" but would result in "strong odor, lacrimation, and irritation of the upper respiratory tract (nose and throat), but no incapacitation or prevention of self-rescue." It is staff's opinion that exposures of the general public to concentrations above these levels pose significant risk of adverse health impacts on sensitive members of the general public. It is also staff's position that these exposure limits are the best available criteria to use in gauging the significance of public exposures associated with potential accidental releases. It is, further, staff's opinion that these limits constitute an appropriate balance between public protection and mitigation of unlikely events, and are useful in focusing mitigation efforts on those release scenarios that pose real potential for serious impacts on the public. Table 1 provides a comparison of the intended use and limitations associated with each of

the various criteria that staff considered in arriving at the decision to use the 75 ppm STPEL.

**HAZARDOUS MATERIAL MANAGEMENT**  
**APPENDIX A TABLE 1**  
Acute Ammonia Exposure Guidelines

Guideline	Responsible Authority	Applicable Exposed Group	Allowable Exposure Level	Allowable* Duration of Exposures	Potential Toxicity at Guideline Level/Intended Purpose of Guideline
IDLH <sup>2</sup>	NIOSH	Workplace standard used to identify appropriate respiratory protection.	300 ppm	30 min.	Exposure above this level requires the use of "highly reliable" respiratory protection and poses the risk of death, serious irreversible injury or impairment of the ability to escape.
IDLH/10 <sup>1</sup>	EPA, NIOSH	Work place standard adjusted for general population factor of 10 for variation in sensitivity	30 ppm	30 min.	Protects nearly all segments of general population from irreversible effects
STEL <sup>2</sup>	NIOSH	Adult healthy male workers	35 ppm	15 min. 4 times per 8 hr day	No toxicity, including avoidance of irritation
EEGL <sup>3</sup>	NRC	Adult healthy workers, military personnel	100 ppm	Generally less than 60 min.	Significant irritation but no impact on personnel in performance of emergency work; no irreversible health effects in healthy adults. Emergency conditions one time exposure
STPEL <sup>4</sup>	NRC	Most members of general population	50 ppm 75 ppm 100 ppm	60 min. 30 min. 10 min.	Significant irritation but protect nearly all segments of general population from irreversible acute or late effects. One time accidental exposure
TWA <sup>2</sup>	NIOSH	Adult healthy male workers	25 ppm	8 hr.	No toxicity or irritation on continuous exposure for repeated 8 hr. work shifts
ERPG-2 <sup>5</sup>	AIHA	Applicable only to emergency response planning for the general population (evacuation) (not intended as exposure criteria) (see preface attached)	200 ppm	60 min.	Exposures above this level entail** unacceptable risk of irreversible effects in healthy adult members of the general population (no safety margin)

1) (EPA 1987) 2) (NIOSH 1994) 3) (NRC 1985) 4) (NRC 1972) 5) (AIHA 1989)

\* The (NRC 1979), (WHO 1986), and (Henderson and Haggard 1943) all conclude that available data confirm the direct relationship to increases in effect with both increased exposure and increased exposure duration.

\*\* The (NRC 1979) describes a study involving young animals which suggests greater sensitivity to acute exposure in young animals. The (WHO 1986) warns that the young, elderly, asthmatics, those with bronchitis and those that exercise should also be considered at increased risk based on their demonstrated greater susceptibility to other non-specific irritants.

## REFERENCES

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## ABBREVIATIONS

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ACGIH, American Conference of Governmental and Industrial Hygienists  
AIHA, American Industrial Hygienists Association  
EEGL, Emergency Exposure Guidance Level  
EPA, Environmental Protection Agency  
ERPG, Emergency Response Planning Guidelines  
IDLH, Immediately Dangerous to Life and Health Level  
NIOSH, National Institute of Occupational Safety and Health  
NRC, National Research Council  
STEL, Short Term Exposure Limit  
STPEL, Short Term Public Emergency Limit  
TLV, Threshold Limit Value  
WHO, World Health Organization

## HAZARDOUS MATERIAL MANAGEMENT

### Appendix B

**Table 5.15-2**  
**Characteristics of Hazardous Materials Used During Operations**

<b>Material</b>	<b>CAS Number</b>	<b>Maximum Quantity Onsite</b>	<b>Hazards<sup>1</sup></b>	<b>Phase</b>	<b>CalARP Threshold Quantity</b>
Aqueous Ammonia	7664-41-7	4,000 gal.	Acute, chronic, fire, pressure	Liquid	500 lbs.
Mineral Insulating Oil	None	5,000 gal <sup>2</sup> .	Acute, chronic, fire	Liquid	N/A
Lubricating Oil	None	2,500 gal <sup>2</sup> .	Acute, chronic, fire	Liquid	N/A
Corrosion Inhibitor	None	55 gal.	Acute, chronic, fire	Liquid	N/A
Ethylene Glycol	107-21-1	25 gal <sup>2</sup> .	Acute, chronic, fire, reactive	Liquid	N/A
Hydrogen					
Carbon Dioxide	124-38-9	2,500 lbs.	Acute, chronic, pressure, reactive	Liquid	N/A

<sup>1</sup> Hazards categories are defined by 40 CFR 370.2. health hazards include acute (immediate) and chronic (delayed). Physical categories include fire, sudden release of pressure, and reactive.

<sup>2</sup> In the equipment and pipelines.

N/A = Not applicable.



# WASTE MANAGEMENT

Testimony of Michael Ringer

## INTRODUCTION

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This analysis presents an assessment of issues associated with managing wastes generated from constructing and operating the proposed United Golden Gate Power Project (UGGPP). It evaluates the proposed waste management plans and mitigation measures designed to reduce the risks and environmental impacts associated with handling, storing, and disposing of project-related hazardous and nonhazardous wastes generated during facility construction and operation.

Energy Commission staff's primary concerns in our waste management analysis are to ensure that:

- Wastes generated during constructing and operating the proposed project will be managed in an environmentally safe manner;
- Disposal of project wastes will not result in significant adverse impacts to existing waste disposal facilities; and
- The management of the wastes will be in compliance with all applicable laws, ordinances, regulations, and standards (LORS).

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS

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### FEDERAL

#### ***RESOURCE CONSERVATION AND RECOVERY ACT (42 U.S.C. SECTION 6901 ET SEQ.)***

The Act, known as RCRA, sets forth standards for the management of hazardous solid wastes. The U.S. Environmental Protection Agency (EPA) may administer the provisions of RCRA in each state. However, the law allows EPA to delegate the administration of RCRA to the various states. When a state receives final EPA authorization, its regulations have the force and effect of federal law. EPA grants final authorization when a state program is shown to be equivalent to the federal requirements. The Department of Toxic Substances Control in California received final authorization on August 1, 1992.

RCRA establishes requirements for the management of hazardous wastes from the time of generation to the point of ultimate treatment or disposal. Section 6922 requires generators of hazardous waste to comply with requirements regarding:

- Record keeping practices which identify quantities of hazardous wastes generated and their disposition,
- Labeling practices and use of appropriate containers,
- Use of a manifest system for transportation, and

- Submission of periodic reports to the EPA or authorized state.

RCRA also establishes requirements applicable to hazardous waste transporters, including record keeping, compliance with the manifest system, and transportation only to permitted facilities.

### ***TITLE 40, CODE OF FEDERAL REGULATIONS, PART 260***

These sections contain regulations promulgated by the EPA to implement the requirements of RCRA as described above. Characteristics of hazardous waste are described in terms of ignitability, corrosivity, reactivity, and toxicity, and specific types of wastes are listed.

## **STATE**

### ***CALIFORNIA HEALTH AND SAFETY CODE SECTION 25100 ET SEQ. (HAZARDOUS WASTE CONTROL ACT OF 1972, AS AMENDED).***

This act creates the framework under which hazardous wastes must be managed in California. It mandates the State Department of Health Services (now the Department of Toxic Substances Control under the California Environmental Protection Agency, or Cal EPA) to develop and publish a list of hazardous and extremely hazardous wastes, and to develop and adopt criteria and guidelines for the identification of such wastes. It also requires hazardous waste generators to file notification statements with Cal EPA and creates a manifest system to be used when transporting such wastes.

### ***TITLE 22, CALIFORNIA CODE OF REGULATIONS, SECTION 66262.10 ET SEQ. (GENERATOR STANDARDS)***

These sections establish requirements for generators of hazardous waste. Under these sections, waste generators must determine if their wastes are hazardous according to either specified characteristics or lists of wastes. As in the federal program, hazardous waste generators must obtain EPA identification numbers, prepare manifests before transporting the waste off-site, and use only permitted treatment, storage, and disposal facilities. Additionally, hazardous waste must only be handled by registered hazardous waste transporters. Generator requirements for record keeping, reporting, packaging, and labeling are also established.

## **LOCAL**

### ***SAN FRANCISCO HEALTH CODE ARTICLE 22***

This article authorizes the San Francisco Department of Public Health to implement and enforce the requirements of the state's Hazardous Waste Control Act .



## ***SAN FRANCISCO HEALTH CODE ARTICLE 22A***

This article requires an applicant for a building permit to provide a site history and soil sampling and analysis for the presence of hazardous waste to the Department of Public Health.

### **SETTING**

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#### **PROJECT AND SITE DESCRIPTION**

Phase I of the UGGPP project consists of a nominal 51 megawatt natural gas-fired simple cycle combustion turbine. The proposed project would be located on about two acres immediately adjacent to the existing United Cogeneration Inc. facility site in the parking lot of the United Airlines Maintenance Operations Center, which is located within the boundary of the San Francisco International Airport.

In order to assess the potential for contamination at the proposed site, El Paso Merchant Energy Company, the project owner, commissioned a Phase I Environmental Site Assessment (ESA) by WZI, Inc. that was conducted in October 2000 (El Paso 2000b, p. S1-WM-1). The Phase I ESA was performed in accordance with American Society for Testing and Materials practice E 1527-97. The purpose of an ESA is to determine the potential for the presence or likely presence of any hazardous substances or petroleum products under conditions that may indicate a release or threat of a release from present or past activities.

The work performed for the Phase I study consisted of:

- A walkthrough to observe conditions at the site and adjoining properties;
- A records review of the site and surrounding properties, including permits, programs, plans, and files, and regulatory agency databases and files;
- Interviews with the San Mateo County Environmental Health Services Department, Regional Water Quality Control Board, and United Cogeneration, Inc. concerning site conditions; and
- A review of aerial photographs to assist in the site historical study.

The site is currently completely covered with asphalt concrete and used as a parking lot. Prior to its use as a parking lot, the site consisted of mudflats adjacent to San Francisco Bay, which were reclaimed by the addition of fill material in 1969. The site has always been used as a parking area since being filled and reclaimed. WZI concluded that there are no conditions of concern and no environmental liabilities observed on the site or properties immediately surrounding the site.

## **IMPACTS**

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### **PROJECT SPECIFIC IMPACTS**

#### **CONSTRUCTION**

Project site preparation and facility construction will generate both nonhazardous and hazardous wastes.

UGGPP estimates that up to 50 tons of nonhazardous solid waste will be generated during construction (El Paso 2000a, AFC p. 5.14-3). The types of wastes include debris and other materials requiring removal during site grading and excavation, excess concrete, lumber, scrap metal, insulation, packaging and empty nonhazardous chemical containers. AFC Table 5.14-2 presents a summary of nonhazardous construction waste streams and management methods.

Hazardous wastes generated during project construction include small quantities of waste oil, spent solvents and welding materials, waste paint, adhesives, and materials from the cleanup of spills. UGGPP estimates the quantities to be less than 200 gallons monthly during the construction period. AFC Table 5.14-2 presents a summary of hazardous construction waste streams and management methods.

#### **OPERATION**

The proposed facility will generate nonhazardous and hazardous wastes during normal operation.

Nonhazardous wastes generated during plant operation include trash, office wastes, empty containers, broken or used parts, used packing material, and used filters. The quantity of nonhazardous wastes generated on a daily basis will be a few cubic yards or less, with some of the material being recyclable. Nonhazardous waste will be recycled where practical and the remainder transported to a Class III (nonhazardous) landfill (El Paso 2000a, AFC p. 5.14-5). AFC Table 5.14-3 shows the types and quantities of nonhazardous wastes that would be generated during facility operation.

Used hazardous substance containers, such as chemical containers or oil filters may be classified as hazardous wastes. However, if managed according to certain regulatory guidelines, such containers may be managed as nonhazardous (Cal. Code Regs., tit. 22, §66261.7, 66266.130).

Hazardous wastes generated during routine project operation include batteries, used lubricants, cleaning solutions, waste paint, contaminated cleanup materials, and compressor wash water. AFC Table 5.14-3 shows the types and quantities of hazardous wastes that would be generated during facility operation. About one-half ton of hazardous wastes would be generated annually (El Paso 2000a, AFC p. 5.14-5).

Periodically, hazardous chemical cleaning wastes, consisting of acid solutions used for cleaning the heat recovery steam generator and turbines, are also generated. These wastes, totaling about 1,000 gallons annually, will be treated in an oil-water separator to remove hydrocarbons and then sent to the United Airlines metal recovery plant for further treatment and disposal.

### **IMPACT ON EXISTING WASTE DISPOSAL FACILITIES**

AFC Table 5.14-1 lists nonhazardous disposal facilities that can be used for wastes generated by the UGGPP project. The nearest facility has a remaining capacity of about 35 million cubic yards and an expected lifetime of about 38 years.

Three Class I landfills in California, at Kettleman Hills in King's County, Buttonwillow in Kern County, and Westmoreland in Imperial County, are permitted to accept hazardous waste (El Paso 2000a, AFC p. 5.14-2). There is a combined total in excess of twenty million cubic yards of remaining hazardous waste disposal capacity at these facilities with remaining lifetimes in excess of 50 years. The amount of hazardous waste being transported to these landfills has decreased in recent years due to source reduction efforts by generators, and the transport of waste out of state that is hazardous under California law, but not federal law.

Much of the hazardous waste generated during facility construction and operation will be recycled, such as used oil and spent air pollution control catalysts. Even without recycling, the generation of hazardous waste from this type of generating facility is minor and thus would not significantly impact the capacity of any of the above landfills by more than a small fraction of one percent.

### **CUMULATIVE IMPACTS**

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Due to the minor amounts of wastes generated during project construction and operation, the insignificant impacts on individual disposal facilities, and the availability of additional regional landfills, cumulative impacts will be insignificant for both hazardous and nonhazardous wastes.

### **FACILITY CLOSURE**

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During any type of facility closure (see staff's **General Conditions** section which discusses planned, unexpected temporary, and unexpected permanent closure), the primary waste management related concern is that project wastes not pose any potentially significant problem to the public, workers, or the environment. Staff believes that conditions of certification in the General Conditions section will adequately address waste management issues related to closure.

In the case of unexpected temporary closure, waste management practices normally required by LORS and already in-place (such as limiting hazardous waste accumulation time to 90 days and requiring proper containment) would likely be adequate to avoid significant problems. In addition, staff's General Conditions for Facility Closure require preparation of an on-site contingency plan which shall

provide for removal of hazardous wastes and draining of all chemicals from storage tanks and other equipment for temporary closures exceeding 90 days.

An approved on-site contingency plan is also required to protect public health and safety in the case of unexpected permanent closure. As above, the plan must provide for the removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment, and the safe shutdown of all equipment.

For planned permanent closure, UGGPP will develop a facility closure plan at least twelve months prior to commencement of closure. El Paso plans to submit an Application for Certification for a replacement 570 MW facility. If the replacement facility is certified by the Energy Commission, that certification decision will include all appropriate and necessary conditions of certification for the replacement of the Phase 1 project and the eventual closure of the replacement project.

## **COMPLIANCE WITH APPLICABLE LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)**

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Energy Commission staff concludes that UGGPP will comply with all applicable LORS regulating the management of hazardous and non-hazardous wastes during project construction and operation. The applicant is required to dispose of hazardous and non-hazardous wastes at facilities approved by the San Francisco Bay Regional Water Quality Control Board or the CAL EPA - Department of Toxic Substances Control. Because hazardous wastes will be produced during project construction and operation, UGGPP must obtain an EPA identification number as a hazardous waste generator. Accordingly, UGGPP will be required to properly store, package and label waste, use only approved transporters, prepare hazardous waste manifests, and keep detailed records. Pursuant to California Code of Regulations, title 22, section 67100.1 et seq., a hazardous waste source reduction and management review may be required, depending on the amounts of hazardous waste ultimately generated.

## **MITIGATION**

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Recycling of solid wastes generated during construction will be maximized to include materials such as scrap metal (copper wire, steel from welding/cutting, aluminum), empty containers, and absorbent materials (El Paso 2000a, AFC p. 5.14-3). Office paper, newsprint, aluminum cans, plastic containers, used air filters, and other nonhazardous wastes from facility operations will be recycled to the extent practical (El Paso 2000a, AFC p. 5.14-4).

UGGPP will establish procedures to minimize the quantities of hazardous wastes generated at the project site (El Paso 2000a, AFC p. 5.14-5). The procurement of hazardous materials will be controlled to minimize accumulation of surplus materials onsite and to prevent unused hazardous materials from becoming "off-spec", thus requiring disposal. Nonhazardous materials will be used in lieu of hazardous

materials whenever possible. Hazardous materials will be reused and hazardous wastes will be recycled whenever possible (El Paso 2000a, AFC p. 5.14-9).

Prior to facility startup, a waste management plan will be developed to assure proper handling, packaging, labeling, storage, recordkeeping, minimization, and disposal of wastes. It will also include provisions for personnel training and emergency procedures (El Paso 2000a, AFC p. 5.14-7).

Energy Commission staff has examined the mitigation measures proposed by UGGPP and concluded that the measures together with applicable LORS will adequately assure that no significant environmental impacts will result from the management and disposal of project-related waste.

## CONCLUSIONS AND RECOMMENDATIONS

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Management of the wastes generated during construction and operation of the UGGPP project will not result in any significant adverse impacts if El Paso Merchant Energy implements the mitigation measures proposed in the Application for Certification (00-AFC-5), the additional measure proposed by staff below, and the proposed conditions of certification.

Staff recommends that if potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, or other signs, UGGPP have an environmental professional (as defined by American Society for Testing and Materials practice E 1527-97 Standard Practice for Phase I Environmental Site Assessments) determine the need for sampling to confirm the nature and extent of contamination. If significant remediation may be required, UGGPP should also contact representatives of the San Francisco Department of Public Health and the Berkeley Regional Office of the California Department of Toxic Substances Control for possible oversight.

## CONDITIONS OF CERTIFICATION

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**WASTE-1** The project owner shall obtain a hazardous waste generator identification number from the Department of Toxic Substances Control prior to generating any hazardous waste.

**Verification:** The project owner shall keep its copy of the identification number on file at the project site and notify the CPM via the monthly compliance report of its receipt.

**WASTE-2** Upon becoming aware of any impending waste management-related enforcement action by any local, state, or federal authority, the project owner shall notify the CPM of any such action taken or proposed to be taken against the project itself, or against any waste hauler or disposal facility or treatment operator with which the owner contracts.

**Verification:** The project owner shall notify the CPM in writing within 10 days of becoming aware of an impending enforcement action. The CPM shall notify the project owner of any changes that will be required in the manner in which project-related wastes are managed.

**WASTE-3** Prior to the start of both construction and operation, the project owner shall prepare and submit to the CPM, for review and comment, a waste management plan for all wastes generated during construction and operation of the facility, respectively. The plans shall contain, at a minimum, the following:

- A description of all waste streams, including projections of frequency, amounts generated and hazard classifications;
- Methods of managing each waste, including treatment methods and companies contracted with for treatment services, waste testing methods to assure correct classification, methods of transportation, disposal requirements and sites, and recycling and waste minimization/reduction plans; and
- Provisions for personnel training and emergency procedures in response to the accidental release of hazardous wastes.

**Verification:** No less than 30 days prior to the start of construction, the project owner shall submit the construction waste management plan to the CPM for review. The operation waste management plan shall be submitted no less than 30 days prior to the start of project operation. The project owner shall submit any required revisions within 15 days of notification by the CPM (or mutually agreed upon date). In the Annual Compliance Reports, the project owner shall document the actual waste management methods used during the year compared to planned management methods.

**WASTE-4** The project owner shall have an environmental professional available for consultation during soil excavation and grading activities. The environmental professional shall be given full authority to oversee any earth moving activities that have the potential to disturb contaminated soil. The environmental professional shall meet the qualifications of such as defined by the American Society for Testing and Materials designation E 1527-97 Standard Practice for Phase I Environmental Site Assessments as evidenced by one of the following or similar credentials: (1) Certified Industrial Hygienist with experience in worker exposure monitoring, (2) Qualified Environmental Professional certification, (3) Registered Environmental Assessor II, or (4) Registered Professional Engineer with experience in remedial investigation and feasibility studies.

**Verification:** At least 30 days prior to the start of construction, the project owner shall submit the qualifications and experience of the environmental professional to the CPM for approval.

**WASTE-5** If potentially contaminated soil is unearthed during excavation at either the proposed site or linear facilities as evidenced by discoloration, odor, detection by handheld instruments, or other signs, the environmental professional shall inspect the site, determine the need for sampling to confirm the nature and extent of contamination, and file a written report to the project owner and CPM stating the recommended course of action. Depending on the nature and extent of contamination, the environmental professional shall have the authority to temporarily suspend construction activity at that location for the protection of workers or the public. If, in the opinion of the environmental professional, significant remediation may be required, the project owner shall contact representatives of the San Francisco Department of Public Health and the Berkeley Regional Office of the California Department of Toxic Substances Control for guidance and possible oversight.

**Verification:** The project owner shall submit any reports filed by the environmental professional to the CPM within five days of their receipt.

## REFERENCES

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El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.

El Paso Merchant Energy (El Paso). 2000b. Supplementary AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 17, 2000.



# **LAND USE**

Testimony of Amanda Stennick

## **INTRODUCTION**

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The land use analysis of the United Golden Gate Power Project Phase I (UGGPP) focuses on two main issues: the project's consistency with local and state land use plans, ordinances and policies; and the project's compatibility with existing and planned land uses. Indirect land use impacts such as noise, traffic, visual resources, air quality, biology, transmission line safety and nuisance, or public health are discussed in those specific areas of this staff assessment.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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### **SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN**

The San Francisco International Airport Master Plan (Master Plan) provides San Francisco International Airport (SFIA) with a set of plans, guidelines, policies, and conditions which serve as a framework for decision-making and implementation of landside facilities. The purpose of the Master Plan is twofold:

1. To provide a coordinated development plan that will consolidate and relocate many of the existing landside facilities to increase the efficiency and cost-effectiveness of landside operations.
2. To respond to the projected economic growth of the Bay Area and to ensure that the future development required to meet that demand at the airport is implemented in a manner compatible with the plan.

### **SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION**

The Bay Conservation and Development Commission (BCDC) was created in 1965 by the McAteer-Petris Act as a temporary agency to prepare an enforceable plan to guide the future protection and use of the San Francisco Bay and its shoreline. The McAteer-Petris Act was amended in 1969 to make permanent the BCDC and its mandate. The McAteer-Petris Act grants the BCDC authority to issue or deny permit applications for placing fill, extracting minerals, or changing the use of any land, water, or structure within the area of its jurisdiction. BCDC's jurisdiction is defined as a shoreline band consisting of all territory located between the shoreline of San Francisco Bay and a line 100 feet landward of and parallel with that line.

### **CALIFORNIA SUBDIVISION MAP ACT**

El Paso will lease a portion of the project site from United Airlines. The City and County of San Francisco (CCSF) is investigating whether a parcel map would be required based on specifications of the lease involving SFIA, United Airlines, and UGGPP. In response to a data request, the applicant stated that Section 66412.1 of the California Government Code exempts the project site from the parcel map requirements of the Subdivision Map Act (El Paso 2000c, data response 32, page

DR-3). Staff is waiting for confirmation from CCSF's City Attorney's office, which serves as counsel for SFIA, to confirm that the project will not require a parcel map.

## **JURISDICTIONAL ISSUES**

### ***SAN FRANCISCO INTERNATIONAL AIRPORT AND THE CITY AND COUNTY OF SAN FRANCISCO***

The SFIA is an agency of the CCSF and the airport property is part of the CCSF jurisdiction. SFIA is owned by the CCSF and operated by a five-member Airport Commission appointed by the Mayor and a Director of Airports appointed by the Airport Commission. Although SFIA is located in San Mateo County and the City of South San Francisco, land use at SFIA is governed by CCSF and is therefore, not subject to land use regulations of San Mateo County or the City of South San Francisco (SFIA Master Plan 1989). As such, SFIA is self-contained in terms of planning, construction, maintenance, and monitoring of its facilities.

### ***CITY OF SOUTH SAN FRANCISCO***

The proposed project is located in that portion of SFIA within the City of South San Francisco and is covered in that city's East of 101 Area Plan. As stated above, SFIA is not subject to the City of South San Francisco's General Plan or zoning regulations. However, in the event of future annexations for purposes of proposing compatible uses and as a basis for cooperative planning with other jurisdictions (including SFIA) the City of South San Francisco has zoned land in the vicinity of the project area P-I (Planned Industrial). This zoning designation is consistent with the proposed use.

## **SETTING**

The proposed project is located at the southwest corner of North Access Road and Coast Guard Road on property currently leased by United Airlines from the Airport Commission. El Paso proposes to sublease the land from United Airlines. SFIA is on the west shore of San Francisco Bay, about 13 miles south of San Francisco in unincorporated San Mateo County and the City of South San Francisco. The proposed project site is surrounded by industrial uses to the north, west, and south, and San Francisco Bay to the east. Because the United Airlines maintenance building currently has a cogeneration unit, the proposed project would be situated in a part of SFIA already committed to energy production.

## **IMPACTS**

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### **CONSTRUCTION IMPACTS**

Construction is scheduled from March through July 2001 (El Paso 2000c, data responses 48, page DR-33). Construction activities would be short-term and temporarily increase the amount of noise, traffic, dust, and emissions in the area. Construction of the project will also impact the United Airlines Employee Parking. Please refer to the **Traffic and Transportation** and **Air Quality** sections for a

discussion of impacts and mitigation. Because there are no agricultural land uses in the area, the project would not impact agriculture or soil resources.

The project will have a 140-foot stack. The applicant has provided a Notice of Proposed Construction or Alteration application (FAA Form 7460-1) for the project. Based upon their aeronautical study which showed that the 140-foot stack does not exceed obstruction standards and would not be a hazard to air navigation, the FAA has issued a Determination Of No Hazard To Air Navigation for the project.

San Mateo County Housing and Community Development recently constructed a 9,000 square foot homeless shelter at 301 North Access Road in the City of South San Francisco, approximately 500 feet northeast of the project site. The shelter will house about 90 persons between the hours of 5:00 p.m. to 7:00 a.m. from November through March. Based on the construction schedule in the AFC, construction of the UGGPP will not impact clients of the homeless shelter.

## **OPERATION IMPACTS**

Operation of the proposed project may impact the homeless shelter by increasing noise levels in the area. Please refer to the section on **Noise** for a discussion of impacts and mitigation. Staff does not expect the project to significantly impact other land uses in the area. The proposed industrial use of the site is compatible with other industrial land uses in the area.

## **CUMULATIVE IMPACTS**

In general, Energy Commission staff considers conversion of agricultural lands to non-agricultural uses, and changes in land use patterns to be significant cumulative impacts. As stated above, there are no agricultural lands on-site or in the vicinity of the project.

The proposed Phase I UGGPP project is part of a two-phase operation that is proposed to be completed by 2003. The Phase I UGGPP project is intended to provide additional power to both SFIA and the population of the San Francisco peninsula. Under emergency conditions, the entire generating capacity of the project could be directed to SFIA. Both phases will be contained within the SFIA, which is heavily industrialized with landside and airside facilities. Therefore, staff does not expect the project to induce a change in land use or have direct or indirect cumulative impacts to land use.

Based on facility requirements for SFIA, a series of development concepts was generated in the Master Plan for the following airport land use areas: terminal area, airline support, airfreight, aircraft maintenance, general aviation, airport support, and non-airport-related facilities. These concepts reviewed potential locations within the airport property and opportunities and constraints related to near- and long-term development. In conjunction with proposed development at SFIA, staff does not expect the UGGPP to have a cumulative impact on land use at SFIA or land use in the vicinity of the project.

## **CONSISTENCY WITH LAND USE PLANS, POLICIES, AND REGULATIONS**

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### **SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN**

Article IX of the CCSF Administrative Code states that the Airport Commission shall have all the powers and duties in the possession, management, supervision, operation, use, maintenance, extension and control of the SFIA. In carrying out such powers and duties the Airport Commission shall have the authority to enter into all contracts, leases, and other agreements which relate to matters under its jurisdiction. United Airlines has an existing lease with the Airport Commission that will expire in 2003, with United holding an option to extend the lease ten years to 2013. Under the terms of the lease, United would need the Airport Commission's approval to either change the land use or sublease the land to El Paso Energy. Thus, the project will require approval from the Airport Commission of the lease agreement between El Paso and United Airlines. As of this writing, lease negotiations with SFIA, United Airlines, and UGGPP have not been completed.

### **SAN FRANCISCO BAY CONSERVATION AND DEVELOPMENT COMMISSION**

The applicant has submitted a map indicating the location of the project and BCDC jurisdiction (El Paso 2000c, data response 35). BCDC staff has reviewed this map and determined that the project is located outside BCDC's 100-foot shoreline band jurisdiction, and that BCDC's comments on the project are advisory (BCDC/Lacko 2001). BCDC notes, though, that it has authority under the Federal Coastal Zone Management Act to review consistency determinations for projects that affect the coastal zone that involve the federal government. Energy Commission staff have not identified any federal licenses or permits for this project that would trigger the need for such consistency determinations.

BCDC's Non-Siting Study designates areas in and around San Francisco Bay that are unsuitable for power plants (BCDC 1988). These areas have a higher priority for industrial, port, or airport uses and are designated as priority use areas in the San Francisco Bay Plan. The SFIA is a designated airport priority use area that BCDC considers an unsuitable location for a power plant (BCDC 1988). Because the project is located in an airport priority use area, BCDC is interested in the extent to which the project is an airport-related use. BCDC has stated that because the project is outside its 100-foot jurisdictional boundary, BCDC's role is advisory and not regulatory. The applicant has stated that the UGGPP is intended to provide additional power to both SFIA and the population of the peninsula, and under emergency conditions, the entire generating capacity of the project could be directed to SFIA (El Paso 2000c, data response 33, page DR-5). Therefore, staff considers the UGGPP to be an airport-related use.

## FACILITY CLOSURE

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El Paso plans to replace Phase I of UGGPP with a combined cycle power plant at the same site within three years. El Paso will submit a separate Application for Certification for the revised project. If the Energy Commission certifies the replacement project, that certification decision will include all the appropriate and necessary conditions for replacing the Phase I project and the eventual closure of the replacement project. If the replacement project is not certified, El Paso will be required to submit a closure plan to the Energy Commission for review and approval prior to planned closure. El Paso is also required to develop an onsite contingency plan to address possible unexpected closure of the facility. The requirements for these plans are discussed in the **GENERAL CONDITIONS** section of this staff assessment.

## CONCLUSION AND RECOMMENDATION

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As stated above, because the site will be leased by El Paso from United Airlines, the need for a parcel map is being reviewed by CCSF. As of this writing, staff does not know if the project is required to comply with the Subdivision Map Act. Absent the issue of compliance with the Map Act, staff's analysis indicates that the project by itself, and cumulatively, will have no land use impacts that cannot be mitigated to a level below significance.

If the Commission certifies the proposed project, staff recommends that it adopt the following conditions of certification. If staff's conditions of certification are implemented, the project will comply with all applicable laws, ordinances, regulations, standards, plans and policies.

## PROPOSED CONDITIONS OF CERTIFICATION

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**LAND USE-1** Prior to the issuance of building or grading permits, the project owner shall submit a site development plan for the project to the Airport Commission for their review and comment, and to the California Energy Commission Compliance Project Manager (CPM) for review and approval. The site development plan shall comply with the SFIA Master Plan. The project owner shall provide a letter of comment from the Airport Commission addressing whether the project is consistent with the provisions of the SFIA Master Plan.

**Verification:** At least 30 days prior to the start of any ground disturbance related to construction, the project owner shall submit the proposed site development plan and a copy of the letter of comment from the SFIA to the CPM for review and approval. The project owner shall submit any required revisions within 15 days of notification by the CPM.

**LAND USE-2** Prior to the issuance of building or grading permits, the project owner shall submit to the CPM a copy of the signed lease between United Airlines

and El Paso Energy and a letter or other evidence of the Airport Commission approval of the lease.

**Verification:** At least 15 days prior to the start of any ground disturbance related to construction, the project owner shall submit the lease and the letter to the CPM.

## REFERENCES

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- Bay Conservation and Development Commission (BCDC/Lacko) 2001. United Golden Gate Power Plant Proposal, Phase 1. Letter from Leslie Lacko to Kevin Kennedy, California Energy Commission, January 3, 2001.
- Bay Conservation and Development Commission (BCDC/Travis). 2000. Comments on the Application for Certification for the United Golden Gate Power Plant Project Phase I. Filed with the California Energy Commission on November 1, 2000.
- Bay Conservation and Development Commission (BCDC). 1988. Designation of Areas Within the Jurisdiction of the San Francisco Bay Conservation and Development Commission that are Unsuitable for Power Plants. December 1988.
- Bay Conservation and Development Commission (BCDC). McAteer-Petris Act. California Government Code 66600-66682; amended through the 1995 Legislative Session.
- Bay Conservation and Development Commission (BCDC). San Francisco Bay Plan. 1968.
- El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.
- El Paso Merchant Energy (El Paso). 2000b. Supplementary AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 17, 2000.
- El Paso Merchant Energy (El Paso). 2000c. Data Request Responses Part 1. Filed with the California Energy Commission, December 6, 2000.
- El Paso Merchant Energy (El Paso). 2000d. Data Request Responses Part 2. Filed with the California Energy Commission, December 15, 2000.
- San Francisco International Airport Final Draft Master Plan (SFIA Master Plan). November 1989.
- San Mateo County General Plan. Adopted November 1986.
- San Mateo County Zoning Regulations. 1992 edition.
- South San Francisco East of 101 Area Plan. Adopted October 1999.

WZI Inc. (WZI/Frederick). 2000c. Supplemental AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 25, 2000.



# TRAFFIC AND TRANSPORTATION

Testimony of David Flores

## INTRODUCTION

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The Traffic and Transportation section of the Staff Assessment addresses the extent to which the Phase I United Golden Gate Power Project (UGGPP) may impact the transportation system within the vicinity of its proposed location. These analyses included the evaluation of the influx of construction workers, and how, over the course of the construction, they can increase roadway congestion and also affect traffic flow. In addition, the transportation of large pieces of equipment can increase roadway congestion and increase traffic hazards. On-going (post construction) operations and maintenance traffic will be minimal; however, it can include a slight increase in the transportation of hazardous materials to the project site. In all cases, the transportation of hazardous materials will need to comply with federal and state laws.

Staff has used all available information to determine the potential for the Phase I UGGPP to have significant traffic and transportation impacts and to assess the availability of mitigation measures that could reduce or eliminate those impacts. Conditions of certification are included to implement the appropriate mitigation measures and to ensure that the project complies with the applicable Laws, Ordinances, Regulations, and Standards (LORS).

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS

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### FEDERAL

The federal government addresses transportation of goods and materials in Title 49, Code of Federal Regulations:

- Sections 171-177 govern the transportation of hazardous materials, the types of materials defined as hazardous, and the marking of the transportation vehicles.
- Sections 350-399, and Appendices A-G, Federal Motor Carrier Safety Regulations, address safety considerations for the transport of goods, materials, and substances over public highways.

### STATE

The California Vehicle Code and the Streets and Highways Code contain requirements applicable to the licensing of drivers and vehicles, the transportation of hazardous materials and rights-of-way. In addition, the California Health and Safety Code addresses the transportation of hazardous materials. Specifically, these codes include:

- California Vehicle Code, Section 353, defines hazardous materials. California Vehicle Code, Sections 31303-31309, regulates the highway transportation of hazardous materials, the routes used, and restrictions thereon.

- California Vehicle Code, Sections 31600-31620, regulates the transportation of explosive materials.
- California Vehicle Code, Sections 32000-32053, regulates the licensing of carriers of hazardous materials and includes noticing requirements.
- California Vehicle Code, Sections 32100-32109, establishes special requirements for the transportation of inhalation hazards and poisonous gases.
- California Vehicle Code, Sections 34000-34121, establishes special requirements for the transportation of flammable and combustible liquids over public roads and highways.
- California Vehicle Code, Sections 34500, 34501, 34501.2, 34501.3, 34501.4, 34501.10, 34505.5-7, 34506, 34507.5 and 34510-11, regulates the safe operation of vehicles, including those which are used for the transportation of hazardous materials.
- California Health and Safety Code, Sections 25160 et seq., addresses the safe transport of hazardous materials.
- California Vehicle Code, Sections 2500-2505, authorizes the issuance of licenses by the Commissioner of the California Highway Patrol for the transportation of hazardous materials, including explosives.
- California Vehicle Code, Sections 13369, 15275, and 15278, addresses the licensing of drivers and the classifications of licenses required for the operation of particular types of vehicles. In addition, it requires the possession of certificates permitting the operation of vehicles transporting hazardous materials.
- California Streets and Highways Code, Sections 117 and 660-72, and California Vehicle Code, Sections 35780 et seq., require permits for the transportation of oversized loads on county roads.
- California Streets and Highways Code, Sections 660, 670, 1450, 1460 et seq., 1470, and 1480, regulates right-of-way encroachment and the granting of permits for encroachments on state and county roads.

## **LOCAL**

### ***CITY AND COUNTY OF SAN FRANCISCO***

#### **SAN FRANCISCO AIRPORT COMMISSION RULES AND REGULATIONS**

The regulations require compliance with goals and policies for transportation and traffic systems.

## ***CITY OF SOUTH SAN FRANCISCO***

### **SOUTH SAN FRANCISCO GENERAL PLAN**

The following General Plan goals and policies establish and identify implementation measures for city traffic and transportation systems:

4.2-G-8 Strive to maintain LOS D or better on arterial and collector streets, at all intersections, and on principal arterials in the CMP during peak hours.

4.2-G-9 Accept LOS E or F after finding that:

- There is no practical and feasible way to mitigate the lower level of service; and
- The uses resulting in the lower level of service are clear, and provide an overall public benefit.

### **SOUTH SAN FRANCISCO MUNICIPAL CODE**

Sets standards for truck routes, excavation requirements, encroachment on city streets, and parking requirements.

## ***SAN MATEO COUNTY***

### **SAN MATEO COUNTY TRANSPORTATION PLAN**

Sets goals for developing and improving transportation corridors.

## **SETTING**

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### **REGIONAL DESCRIPTION**

The proposed UGGPP Phase I project is located adjacent to the existing United Cogeneration Inc. (UCI) Facility at the southwest corner of North Access Road and North Field Road. The power plant will occupy a portion of the area that currently serves as the east parking lot used by employees of the United Airlines Maintenance Operations Center. Descriptions of some of the critical roads and highways in the study area are provided below. **TRAFFIC AND TRANSPORTATION** Figure 1 illustrates the major roads, potential access roads, and highways in the project area.

**TRAFFIC AND TRANSPORTATION Figure 1**  
**Local Roadways in Vicinity of UGGPP Phase I**

## ***STATE HIGHWAYS AND LOCAL ROADWAYS***

Highway 101 and Interstate 380 provide regional access to the project site. Highway 101 is a north-south freeway that is located west of United Airlines Maintenance Operations Center. Interstate 380 is an east-west freeway that extends from Highway 101 west to Interstate 280. The nearest on and off ramps for both Interstate 380 and Highway 101 are located on North Access Road, just west of the project site. Therefore, the North Access Road would be the only county-maintained roadway affected by the proposed project. This local road primarily serves traffic related to the mix of industrial land uses that surround the proposed UGGPP.

## ***PUBLIC TRANSPORTATION***

The San Mateo Sam Trans provides local public bus transportation service and connections to other transportation systems including light rail transit (LRT), Caltrain, and Bay Area Rapid Transit (BART).

Sam Trans operates an extensive network of local bus routes serving the urbanized portions of the county. These routes serve main arterial streets, neighborhoods/residential areas, shopping, schools, employment areas and other businesses. Bus route KX operates between the Transbay Terminal and Palo Alto with stops at the San Francisco International Airport (SFIA), with stops at the United Airlines Maintenance Base every hour. Route BX operates between the Colma Part Station and SFIA, with stops at the United Airlines Maintenance Base every fifteen minutes. Route 193 operates between the Stonetown Shopping Center and SFIA, with stops at the United Airlines Maintenance Base every hour.

Caltrain operates passenger rail service between Santa Clara, San Mateo, and San Francisco counties. Millbrae and San Bruno stations are situated west of the airport. Caltrain operates a free shuttle every 20 minutes the Millbrae station and the San Francisco International Airport, passing the United Airlines Maintenance Center. This stop is approximately one half-mile from the project site.

## ***BICYCLE FACILITIES***

As provided in the AFC, bicycling is allowed on all streets and roads except where prohibited (i.e., freeways). The only designated bike route that currently exists is on South Airport Blvd. No other designated bike routes exist in the project area.

The South San Francisco General Plan includes a proposed bike trail near the project site. This path will run from South Airport Blvd, along the North Access Road to the San Francisco Bay.

## ***PLANNED ROADWAY AND TRANSIT IMPROVEMENTS***

No roadway improvements are planned for the local roadways in this area. The Bay Area Rapid Transit (BART) and the Airport Rail Transit (ART) systems are currently under construction in the area of the project site. The BART extension, which would include a station at Concourse H within the San Francisco International Airport, is

expected to open in spring 2002. The ART system would connect with BART at Concourse H and provide service to the rental car facility ( approximately two miles southeast of the project site), and is expected to open in January 2002. The ART system will later be extended north along the west side of the UAL west parking lot to Lot DD garage and the future Multi-Modal Center. Although the ART extension is expected to be completed at the end of 2002, it will not be operational until mid to late 2003.

### ***LINEAR FACILITIES***

There are no linear transmission facilities required for Phase I UGGPP, therefore no further analysis is addressed in this section.

### ***NATURAL GAS PIPELINE***

The existing UCI natural gas supply line will fuel Phase I UGGPP. The primary source of natural gas for the UCI facility comes from a large interstate pipeline owned by PG&E Gas Services. Only in-plant piping will be required. No further analysis is addressed in this section.

### ***RAW WATER SUPPLY PIPELINE***

Phase I UGGPP will receive its raw water from the existing UCI water supply line, therefore no further analysis is addressed in this section.

### ***EFFLUENT WATER DISCHARGE LINE***

The water effluent will be discharged to UCI. No new effluent pipeline is proposed for the Phase I UGGPP, therefore no further analyses is addressed in this section.

### ***ACCIDENT HISTORY***

Traffic accident records for the past three years and nine months were reviewed and compared with statewide average accident rates to determine if the primary access road experienced unusually high numbers of accidents. The data provided by the applicant reflected one accident that was recorded at the intersection of North Access Road and South Airport Blvd. Sixteen accidents were reported along South Airport Blvd in this area. In this same period, nearly 10 million vehicles have traveled this roadway. Considering this factor, less than 0.01 % of the vehicles have been involved in accidents, which is well below the statewide average for similar types of roadways. None of the recorded accidents occurred at railroad crossings. This level of accident history does not indicate any unusual hazard or improperly designed facilities along these roads (El Paso 2000a, AFC pg. 5.11-3).

### ***TRUCK TRAFFIC***

According to the City of South San Francisco, South Airport Blvd and North Access Road are designated as truck routes. Therefore, the California Vehicle Code load and width limits apply to these roadways, which are under Caltrans jurisdiction. These limits are 80,000 pounds per truck.

## CURRENT ROADWAY AND INTERSECTION OPERATING CONDITIONS

The operating conditions of a roadway system are described using the term “level of service”. Level of service (LOS) is a description of a driver's experience at an intersection or roadway based on the level of congestion or delay. However, it is not a measure of safety or accident potential. Intersection and roadway LOS can range from “A”, representing free-flow conditions with little or no delay, to “F”, representing saturated conditions with substantial delay.

As provided in **TRAFFIC AND TRANSPORTATION Figure 1**, the project site is accessed by Highway 101 and Interstate 380. Highway 101 is a north-south freeway that is located west of the United Airlines Maintenance Operations Center (UAL MOC). Interstate 380 is an east-west freeway that extends from Highway 101 west to Interstate 280. The nearest on and off ramps for both Interstate 380 and Highway 101 are located on North Access Road, just west of the project site. On and off ramps for Interstate 380 are also located on South Airport Blvd, at the intersection with North Access Road; and a set of on and off ramps for Highway 101 are located on San Bruno Avenue, just west of South Airport Blvd.

South Airport Blvd, North Access Road, and North Field Road provide local roadway access. South Airport Blvd is a north-south roadway with two lanes in each direction and serves traffic to the UAL MOC and the Interstate 380 and Highway 101 on and off ramps. North Access Road is an east-west roadway with two lanes in each direction, and North Field Road is a north-south roadway with one lane in each direction.

The applicant conducted traffic operation analyses at intersections that would most likely be affected by the project. **TRAFFIC AND TRANSPORTATION Table 1** shows that roadway intersections affected by UGGPP Project traffic that will operate at acceptable levels of service (LOS D or better) during the a.m. and p.m. peak hour under existing conditions (El Paso 2000a, AFC Table 5.11-1).

**TRAFFIC AND TRANSPORTATION Table 1**  
**Existing Intersection Levels of Service**

AM Peak Hour			PM Peak Hour	
Signalized Intersections	Average Delay (seconds/Vehicles)	Level of Service	Average Delay (seconds/Vehicle)	Level of Service
North Access Road/I-380 Ramps	12.0	B	14.0	B
South Airport Blvd/I-380 Ramps	24.1	C	54.5	D
South Airport Blvd/Lot DD Garage	27.1	C	44.8	D
South Airport Blvd/UAL West Lot	8.8	A	12.9	B
South Airport Blvd/San Bruno Avenue	38.0	D	39.7	D

Source: El Paso 2000a, AFC pg. 5.11-3, Table 5.11-1

## IMPACT

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The California Environmental Quality Act (CEQA) indicates that a project could have a significant effect on traffic and transportation if the project will:

- Cause an increase in traffic, which is substantial in relation to the existing traffic load and capacity of the highway and road system (i.e. result in a substantial increase in either the number of vehicle trips, the volume to capacity ratio on roads, or congestion at intersections).
- Exceed, either individually or cumulatively, a level of service standard established by the county congestion management agency for designated roads or highways.
- Substantially increase hazards due to a design feature (e.g., sharp curves or dangerous intersections) or incompatible uses (e.g., farm equipment).
- Result in inadequate parking capacity.

## POWER PLANT

### ***CONSTRUCTION PHASE***

#### **COMMUTE TRAFFIC**

Construction of the Phase I UGGPP will occur over an estimated 5-month period and will require a total construction workforce of 30 workers on average per month, assuming a single shift and a 40-hour workweek. An estimate of the number of trips by construction workers is based upon a conservative assumption that 100 percent of the workers are driving alone (i.e., no carpooling assumed) to/from the site during the peak hour.

The preferred commuting route that workers will take to the project site will depend on the community from which they commute. No matter what community the individual commutes come from, all persons going to the site will eventually merge onto Interstate 380 and Highway 101 and exit at the North Access Road to get to the UGGPP.

As reflected in **TRAFFIC AND TRANSPORTATION Table 2**, the AFC provided results of the traffic analysis for construction period conditions assuming the full build-out of the power plant (Phase I and Phase 2 conversion to a nominal 570 MW natural gas -fired combined cycle power plant) which would consist of approximately 344 construction related staff, 12 heavy trucks, and eight light trucks generated on a daily basis. Based on their analyses, average delay at the study intersections would increase slightly compared to existing conditions. This increase is partly due to the UAL MOC employees currently parking at the East Parking Lot being shifted to the new Lot DD Expansion Surface Parking Lot, existing Lot DD Garage, and the re-stripped UAL West Parking Lot during project construction. In addition, the study intersections would operate at an acceptable LOS D or better during both the morning and afternoon peak hours.



With the construction of Phase I of UGGPP, the project will add approximately 30 employee round trips to the existing traffic during construction. Since the full buildout of UGGPP is not projected to lower the level of service below acceptable levels, the smaller Phase I UGGPP will not significantly effect the level of service at these intersections.

## TRUCK TRAFFIC

Construction traffic will also consist of 10 heavy vehicle truck trips per day during an average construction period. The AFC assumes the same distribution of truck trips as the commute construction trips.

Construction of the Phase I UGGPP will generate hazardous wastes consisting primarily of batteries, mercury (in switches and lights), asbestos-containing materials, and various liquid wastes (e.g., cleaning solutions, solvents, paint and antifreeze).

Licensed hazardous waste transporters will have direct access to the UGGPP via North Access Road. The close proximity of the UGGPP to Highway 101 and Interstate 380 eliminates the need to carry any hazardous wastes along residential streets. Routes for offsite removal of hazardous wastes would consist of a connection to either I-5 or SR 99 to reach any of California's three Class I hazardous waste facilities (located in Kern, Imperial and Kings Counties).

**TRAFFIC AND TRANSPORTATION Table 2**  
**Construction Period Intersection Levels of Service**  
**Based on full build-out of UGGPP**

AM Peak Hour			PM Peak Hour	
Signalized Intersections	Average Delay (seconds/Vehicles)	Level of Service	Average Delay (seconds/Vehicle)	Level of Service
North Access Road/I-380 Ramps	15.0	B	13.4	B
South Airport Blvd/I-380 Ramps	26.1	C	52.3	D
South Airport Blvd/Lot DD Garage	32.5	C	52.2	D
South Airport Blvd/UAL West Lot	19.6	B	34.7	C
South Airport Blvd/San Bruno Avenue	40.4	D	39.1	D

Source: UGGPP 2000, AFC pg. 5.11-8, Table 5.11-5

The transportation and handling of hazardous substances associated with the UGGPP can increase roadway hazard potential. The handling and disposal of hazardous substances are addressed in the **WASTE MANAGEMENT** and the **HAZARDOUS MATERIALS MANAGEMENT** sections of the Staff Assessment. Potential impacts of the transportation of hazardous substances can be mitigated to insignificance by compliance with federal and state standards established to regulate the transportation of hazardous substances. Conditions of certification that ensure this compliance are discussed later in this analysis.

The State Department of Motor Vehicles specifically licenses all drivers who carry hazardous materials. Drivers are required to carry a manifest, available for inspection by the California Highway Patrol at inspection stations along major highways and interstates. Drivers are also required to check for weight limits and conduct periodic brake inspections. Commercial truck operators handling hazardous materials are also required to take instruction in first aid and procedures on handling hazardous waste spills.

The California Vehicle Code and the Streets and Highways Code (Sections 31600 through 34510) are equally important to ensure that the transportation and handling of hazardous materials are done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the California Highway Patrol. In addition, Highway 101 and Interstate 380 have been approved by the California Highway Patrol as highways for use in the transportation of inhalation related hazardous materials and there are no highway design concerns regarding the highway routes to be taken. For an in-depth description of the amount and type of hazardous materials that will be used during the construction of the facility, see the **WASTE MANAGEMENT** and **HAZARDOUS MATERIALS MANAGEMENT** sections of the Staff Assessment.

Transportation of equipment exceeding the load size and weight limits of any roadways will require special permits. The procedures and processes for obtaining such permits are fairly straightforward. Mitigation measures and conditions of certification that ensure this compliance are discussed later in this section.

#### **TOTAL PROJECT CONSTRUCTION TRAFFIC**

Product deliveries via truck traffic will not contribute or create localized impacts to roadway performance based on the following commute and truck traffic estimates. During the construction period, the Phase I UGGPP will generate 60 commute trips per day and approximately 10 delivery truck/heavy vehicle truck trips per day for a total of 70 trips per day.

The analysis assumed that half the traffic generated by construction of the proposed project would arrive during the a.m. peak hour while the other half will arrive during the p.m. peak hour. Since construction activities and heavy vehicle/truck deliveries would likely occur throughout the day (i.e., during both peak and off-peak hours) these assumptions generate a conservative estimate of traffic impacts.

## **UAL EAST PARKING LOT**

During the construction of Phase I UGGPP, approximately 375 existing parking spaces will not be available for UAL MOC employees at the East Parking Lot during the 5-month construction period. Once construction of Phase I UGGPP is completed, approximately 245 parking spaces will permanently not be available to UAL employees.

New development and changes at San Francisco International Airport are expected to occur over the next several years. Currently underway, the UAL West Parking Lot will be re-striped to add approximately 151 new parking spaces and a new 1,600 space surface parking lot (Lot DD expansion) located adjacent to the UAL West Parking Lot will be opened this year. By approximately mid-2001, the new Lot CC surface parking lot located near the airport terminals will be repaved to provide about 500 spaces. In addition, a 2,000 space private parking garage at the northeast corner of North Access Road/I-380 ramps is expected to be opened during the same timeframe.

Staff at the San Francisco International Airport Aviation Management office has indicated that, during project construction, parking demand at the East Parking Lot may be accommodated in the new Lot DD Expansion Surface Parking Lot, existing Lot DD garage, and the re-striped UAL West Parking Lot. Therefore, the impact of the project on employee parking for the area is not expected to cause any significant parking impacts.

## ***OPERATIONAL PHASE***

### **COMMUTE AND VISITOR TRAFFIC**

The operational phase of the Phase I UGGPP will require the addition of four full-time employees. Adequate parking will be available for these employees on the UAL site. The existing state highway and county roadway system will not be significantly impacted by the small increase in commute and visitor traffic associated with the operation of the UGGPP.

### **TRUCK TRAFFIC**

The transportation and handling of hazardous substances associated with the UGGPP can increase roadway hazard potential. According to the AFC, operation of the project will require approximately one to two deliveries per month of aqueous ammonia solution. (AFC Section 3.4.3.5, pg.3.4-7).

Direct access to the UGGPP by licensed hazardous waste transporters will be via the Highway 101 and North Access Road. The close proximity of the UGPP to Highway 101 and Interstate 380 precludes the need to carry any hazardous wastes along residential streets. Routes for offsite removal of hazardous wastes would consist of Highway 101 to Highway 92 across the San Mateo Bridge with a connection to either I-5 or SR 99 to reach any of California's three Class I hazardous waste facilities (located in Kern, Imperial and Kings Counties).

The California Vehicle Code and the Streets and Highways Code (Sections 31600 through 34510) are equally important to ensure that the transportation and handling of hazardous materials are done in a manner that protects public safety. Enforcement of these statutes is under the jurisdiction of the California Highway Patrol. For an in-depth description of the amount and type of hazardous materials that will be used during the operation of the facility, see the **WASTE MANAGEMENT** and **HAZARDOUS MATERIALS MANAGEMENT** sections of the Staff Assessment.

Potential impacts of the transportation of hazardous substances can be mitigated to insignificance by compliance with Federal and State standards established to regulate the transportation of hazardous substances. Mitigation measures and conditions of certification that ensure this compliance are discussed later in this analysis.

The existing state highway and county roadway system will not be significantly impacted by the small increase in truck traffic associated with the operation of the first phase of the UGGPP. According to the AFC, operation of the project will result in approximately one to two truck deliveries per month.

#### **LINEAR FACILITIES**

The operation of linear facilities that would serve the proposed Phase I UGGPP is not expected to have any impacts on area roadways, as all linears will be tied into the adjacent UCI facility.

#### **CUMULATIVE IMPACTS**

The UGGPP site is situated in a predominantly industrial land use area within the San Francisco International Airport property boundaries. Combined with the relatively low density of other surrounding land uses, the addition of only four full-time employees, one to two truck deliveries per month, and the adequate roadway capacity on North Access Road, the UGGPP is not expected to have any significant cumulative impacts during operation.

Based on the current and future traffic characteristics (ie. LOS, AADT, highway capacities) of the area, traffic associated with the Phase I UGGPP is minimal, and regional and local roadways are considered to have adequate capacity to accommodate related construction traffic.

In addition, the applicant has not identified any additional projects planned in the area that could potentially cause traffic impacts on the local roadways or state highways affected by this project under cumulative conditions.

The regional area will likely continue to experience development and traffic volume growth. Consequently, traffic volumes on the regional roadway system will likely increase. The project's level of traffic generation will diminish between the construction and operational phases such that an increase in background traffic should not be problematic.

Mitigation to minimize any potential traffic impacts under cumulative conditions on the affected state highways can be accomplished through the implementation of transportation demand strategies that limit all commute and truck traffic related to the construction of the UGGPP to off-peak hours as part of a construction traffic control and implementation plan (to be coordinated with The City of South San Francisco and the San Francisco Airport Commission). Mitigation measures and conditions of certification that ensure this compliance are discussed later in this section.

## **FACILITY CLOSURE**

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The planned life of the first phase 51 MW simple cycle generation facility is three years. El Paso Merchant Energy plans to replace Phase I UGGPP with a 570 MW combined-cycle power plant at the same location. A separate Application for Certification will be filed for that project. If the Energy Commission certifies the replacement project, that decision will include all appropriate and necessary conditions for the replacement of Phase I and the eventual closure of the replacement project.

If the project is not certified, at least twelve months prior to the proposed decommissioning, the applicant shall prepare a Decommissioning Plan for submission to the Energy Commission for review and action. At the time of closure all then applicable LORS will be identified and the closure plan will address how these LORS will be complied with. Closure will create traffic levels that are similar in intensity and duration to those expected during facility construction. Potential impacts and necessary mitigation for Phase I UGGPP traffic and transportation impacts will be determined when the Facility Closure Plan is submitted for Energy Commission approval.

## **MITIGATION**

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The applicant has indicated their intention to comply with all LORS relating to the transport of hazardous materials. The applicant should also implement the following traffic and transportation mitigation measures:

- Enforce a policy that all project-related parking occurs in designated parking areas;
- Obtain and comply with all necessary encroachment and transportation permits from Caltrans and all other jurisdictions regarding the transportation of heavy equipment and hazardous materials and any construction activity within the public right-of-way;
- Repair any damage to North Access Road incurred during UGGPP construction to the road's pre-project construction condition;
- Prepare a construction traffic control plan and transportation demand implementation program that limits construction-period truck and commute traffic to off-peak periods, to the satisfaction of the City of South San Francisco and Caltrans. These plans and programs should establish schedules for major shifts

outside of the ambient street traffic peak periods and timing of heavy vehicle equipment and building materials deliveries.

- Provide sufficient pavement for the additional access road proposed along the east side of the UGGPP site to provide adequate truck turning radii in order to help facilitate safe truck-turning.

## **COMPLIANCE WITH LORS**

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UGGPP has stated their intention to comply with all federal, state, and local LORS. A condition to ensure compliance is proposed below. Therefore, the project is considered consistent with identified federal, state and local LORS.

## **CONCLUSIONS AND RECOMMENDATIONS**

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1. During the construction phase, increased roadway demand resulting from the daily movement of workers and materials will slightly increase congestion and delay, although the level of service on each of the studied state highway segments and intersections would be unchanged.
2. During the operational phase, increased roadway demand resulting from the daily movement of workers and materials will be negligible.
3. All transportation and handling of hazardous substances can be mitigated to insignificance by compliance with federal, state, and local standards and permits established to regulate the transportation of hazardous substances.
4. The owner should also obtain and comply with all necessary encroachment permits from Caltrans and all other jurisdictions related to any construction within the public right-of-way.
5. Construction activities have the potential to damage local roadways. The applicant should be required to repair damaged roadways to their original condition.
6. The AFC indicates that parking for the construction workforce will be provided in an area on or adjacent to the project site. The applicant is expected to enforce a policy that all project-related parking occurs in designated parking areas; therefore, construction-period parking is not considered a significant project impact.
7. The addition of UGGPP construction traffic to the local roadways and state highways under cumulative conditions is not expected to have any significant cumulative impacts. The project's level of traffic generation will diminish between the construction and operational phases such that an increase in background traffic should not be problematic.

The conditions of certification proposed below are those that staff has identified as necessary to mitigate project impacts based on the information available to date.

## CONDITIONS OF CERTIFICATION

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**TRANS-1** The project owner shall comply with California Department of Transportation (Caltrans), the City of South San Francisco and the San Francisco Airport Commission on limitations on vehicle sizes and weights. In addition, the project owner or their contractor shall obtain necessary transportation permits from Caltrans and all relevant jurisdictions for roadway use.

**Verification:** In the Monthly Compliance Reports, the project owner shall submit copies of any oversize and overweight transportation permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

**TRANS-2** The project owner or their contractor shall comply with California Department of Transportation (Caltrans) and the City of South San Francisco limitations for encroachment into public rights-of-way and shall obtain necessary encroachment permits from Caltrans and all relevant jurisdictions.

**Verification:** In the Monthly Compliance Reports, the project owner shall submit copies of any encroachment permits received during that reporting period. In addition, the project owner shall retain copies of these permits and supporting documentation in its compliance file for at least six months after the start of commercial operation.

**TRANS-3** The project owner shall ensure that all federal and state regulations for the transport of hazardous materials are observed.

**Verification:** The project owner shall include in its Monthly Compliance Reports copies of all permits and licenses acquired by the project owner and/or subcontractors concerning the transport of hazardous materials.

**TRANS-4** Following completion of project construction of the power plant and all related facilities, the project owner shall repair the North Access Road to its pre-construction condition.

**Protocol:** At least thirty days prior to start of construction, the project owner shall photograph, videotape or digitally record images of North Access Road from South Airport Blvd to the project entrance. The project owner shall provide the Compliance Project Manager (CPM), the City of South San Francisco, Caltrans (as necessary) and the San Francisco Airport Commission with a copy of these images. At least 30 days prior to start of construction, the project owner shall also notify Caltrans about the schedule for project construction. The purpose of this notification is to postpone any planned roadway resurfacing and/or improvement projects until after the

project construction has taken place and to coordinate construction related activities associated with other projects.

**Verification:** Within 30 days after completion of project construction, the project owner shall meet with the CPM, the City of South San Francisco, Caltrans and the San Francisco Airport Commission (as needed) to determine and receive approval for the actions necessary and schedule to complete the repair of identified sections of public roadways to original or as near original condition as possible. Following completion of road improvements, if necessary, the project owner shall provide to the CPM a letter from the City of South San Francisco stating their satisfaction with the road improvements.

**TRANS-5** The project owner shall develop a construction traffic control and transportation demand implementation program that limits construction-period truck and commute traffic to off-peak periods in coordination with the City of South San Francisco, Caltrans and the San Francisco Airport Commission. Specifically, this plan shall include the following restrictions on construction traffic addressing the following issues for the Phase I power plant construction:

- provide a redesigned access entry into the project site to provide adequate truck turning radii in order to help facilitate truck turning movements.
- establish construction work hours outside of the peak traffic periods to ensure that construction workforce traffic occurs during off-peak hours.
- schedule of heavy vehicle equipment and building materials deliveries to occur during off-peak hours.
- maintain access to adjacent commercial properties.

**Verification:** At least 30 days prior to start of site preparation or earth moving activities, the project owner shall provide to the City of South San Francisco, Caltrans and the San Francisco Airport Commission for review and comment, and to the CPM for review and approval, a copy of their construction traffic control plan and transportation demand implementation program.

**TRANS-6** During construction of the power plant and all related facilities, the project owner shall enforce a policy that all project related parking occurs in designated parking areas.

**Verification:** At least 30 days prior to start of construction, the project owner shall submit a parking and staging plan for all phases of project construction to the San Francisco Airport Commission for review and comment, and to the CPM for review and approval.



## REFERENCES

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El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.

El Paso Merchant Energy (El Paso). 2000b. Supplementary AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 17, 2000

WZI Inc. (WZI/Frederick). 2000c. Supplemental AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 25, 2000.



# NOISE

Testimony of Paul H. Miller

## INTRODUCTION

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The construction and operation of any power plant creates noise, or unwanted sound. The character and loudness of this noise, the times of day or night during which it is produced, and the proximity of the facility to any sensitive receptors combine to determine whether the facility will meet applicable noise control laws and ordinances, and whether it will exhibit significant adverse environmental impacts.

The purpose of this analysis is to identify and examine the likely noise impacts from El Paso Merchant Energy's (El Paso) proposal for the construction and operation of the United Golden Gate Power Project Phase I (UGGPP), and to recommend procedures to ensure that the resulting noise impacts will comply with applicable laws and ordinances, and will be adequately mitigated. This will enable the Energy Commission to make findings that:

- the UGGPP will likely be built and operated in compliance with all applicable noise laws, ordinances, regulations and standards (LORS); and
- the UGGPP will present no significant adverse noise impacts, or none that have not been mitigated to the extent feasible.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS

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### FEDERAL

Under the Occupational Safety and Health Act of 1970 (OSHA) (29 U.S.C. § 651 et seq.), the Department of Labor, Occupational Safety and Health Administration (OSHA) has adopted regulations (29 C.F.R. § 1910.95) designed to protect workers against the effects of occupational noise exposure. These regulations list permissible noise level exposure as a function of the amount of time during which the worker is exposed (see **Noise: Appendix A, Table A4** immediately following this section). The regulations further specify a hearing conservation program that involves monitoring the noise to which workers are exposed; assuring that workers are made aware of overexposure to noise; and periodically testing the workers' hearing to detect any degradation.

There are no federal laws governing offsite (community) noise.

### STATE

California Government Code Section 65302(f) requires that a noise element be prepared as part of the General Plan to address foreseeable noise problems. In addition, Title 4, California Code of Regulations has guidelines for evaluating the compatibility of various land uses as a function of community noise exposure. The State land use compatibility guidelines are listed in **Noise: Table 1**.

**Insert Noise Table 1 Here**

Other State LORS include the California Environmental Quality Act (CEQA) and California Occupational Safety and Health Administration (Cal-OSHA) regulations.

### ***CALIFORNIA ENVIRONMENTAL QUALITY ACT***

CEQA requires that significant environmental impacts be identified, and that such impacts be eliminated or mitigated to the extent feasible. The CEQA Guidelines (Cal. Code Regs., tit. 14, § 15000 et seq., Appendix G, § XI) explain that a significant effect from noise may exist if a project would result in:

- “a) Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies.
- b) Exposure of persons to or generation of excessive ground borne vibration or ground borne noise levels.
- c) A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project.
- d) A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project....”

### ***CAL-OSHA***

Cal-OSHA has promulgated Occupational Noise Exposure Regulations (Cal. Code Regs., tit. 8, §§ 5095-5099) that set employee noise exposure limits. These standards are equivalent to the federal OSHA standards described above.

### ***LOCAL***

The UGGPP plant site is located at the San Francisco International Airport (SFIA) within the city limits of South San Francisco. SFIA is owned and operated by and under the jurisdiction of the City and County of San Francisco (San Francisco). SFIA is owned by San Francisco as a utility and under state law is therefore not subject to the land use regulations of the County of San Mateo or any other local jurisdiction or municipality, even where zoning has been assigned by local jurisdictions or municipalities (El Paso 2000c). The city of San Bruno is nearby and would be potentially affected by noise from the UGGPP. The noise LORS applicable to this project are from the SFIA Master Plan, as well as the cities of San Bruno and South San Francisco. The applicant has not identified any new off-site linear features that would be required for the UGGPP.

### ***SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN***

The SFIA Master Plan contains Noise Abatement Regulations to mitigate the effects of airport noise on the communities and residences that are located near the airport. The regulations combine two approaches to controlling airport noise. First, the regulations require air carriers to progressively use, in their operations at SFIA, the newest and quietest generation of aircraft, Stage 3 airplanes and to progressively limit the nighttime hours during which Stage 2 aircraft can operate. The second approach of the regulations is to impose a maximum nighttime single-event noise limit, which would decrease gradually over time.

## ***CITY OF SOUTH SAN FRANCISCO***

The municipal code for the City of South San Francisco includes noise regulations to protect residents from excessive, unnecessary and unreasonable noises (Title 8, Chapter 8.32). Maximum permissible levels for residential land uses are set in Part 8.32.030 at 60 dBA during the daytime (7:00 a.m. to 10:00 p.m.) and 50 to 55 dBA for nighttime hours (10:00 p.m. to 7:00 a.m.). Additional limits are set for the areas east of Highway 101 (Gateway and Oyster Point) and they are 65 dBA for daytime and 60 dBA for nighttime. The municipal code sets an upper noise limit of 70 dBA for any time and any land use.

## ***CITY OF SAN BRUNO***

The City's municipal code includes noise regulations to prohibit unnecessary, excessive, and annoying noises from all sources (Chapter 6.16). Part 6.16.060 addresses machinery noise and limits noise generated by any equipment to not exceed the ambient noise level by more than 10 dBA. Part 6.16.070 relates to construction noise and sets daytime (7:00 AM to 10:00 PM) and nighttime (10:00 PM to 7:00 AM) limits. The daytime limit is 85 dBA and the nighttime limit is 60 dBA at 100 feet from the construction activity.

## **SETTING**

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### **PROJECT BACKGROUND**

The UGGPP involves the construction and operation of a simple cycle GE LM-6000 power plant nominally rated to 51 MW with associated ancillary equipment. The project would be entirely within the boundary of the SFIA. It would be adjacent to the existing United Cogeneration Inc. (UCI) facility, and the United Airlines Maintenance Operations Center. The site is currently used as a parking lot.

### **EXISTING LAND USE**

The UGGPP would be located within SFIA, within the city limits of South San Francisco. Existing land uses in the immediate project area are predominantly industrial to the north, west and south; San Francisco Bay is to the east. The nearest uses are the UCI cogeneration facility immediately to the west of the project site and the United Airlines Maintenance Operations Center, also immediately to the west of the project site. Some commercial uses (hotels and offices) are located to the north of the site and to the east of US 101. The San Mateo County Housing and Community Development Division (HCD) recently completed construction of a homeless shelter (Safe Harbor) directly northeast of the project site. Safe Harbor began operating in December 2000 (Ray, 2000). Safe Harbor is on the San Mateo County Transit District (SAMTRANS) bus facility property on Belle Air Island at 301 North Access Road in South San Francisco.

### ***SOUTH SAN FRANCISCO ZONING AND GENERAL PLAN DESIGNATION***

Although SFIA is not subject to land use regulations of the city of South San Francisco, the South San Francisco zoning in the vicinity of the project area is Zone P-1 (Planned Industrial). The SFIA Master Plan indicates compatible adjacent land

uses (industrial activities including engine testing) in the area of the UGGPP (SFIA 1989).

## **SENSITIVE RECEPTORS**

The closest residences are in San Bruno at 7<sup>th</sup> and Walnut, approximately 4,000 feet to the west of the UGGPP project site. Safe Harbor is a sensitive receptor approximately 500 feet northeast of the project site, but was constructed to mitigate for the estimated existing noise level of 77.5 dBA, CNEL at the homeless shelter (San Mateo County 2000). Other than Safe Harbor, the nearest potential sensitive receptors to the north are residences in South San Francisco that are more than one mile from the UGGPP site.

## **EXISTING NOISE LEVELS**

SFIA is a major source of noise in the region, with air traffic occurring throughout the day and also to a lesser degree at night. US 101 and I-380 are also major sources of noise near the project site. With both air traffic at SFIA and motor vehicle traffic on Highway 101, the project site is in one of the noisiest locations in the San Francisco Bay Area. The site is also next to another major noise source, the United Airlines Maintenance Operations Center. In addition, an existing cogeneration facility is west of the project site next to the subject maintenance center.

Aircraft noise contours for 1996 and 2006 (estimated) indicate that the project site is in an area with CNEL levels above 70 dBA. Although aircraft noise at the airport is expected to be reduced due to the future use of quieter Stage 3 aircraft, the project site is still predicted to have a CNEL above 70 dBA in 2006.

In order to predict the likely noise effects of the UGGPP on the sensitive receptors, the applicant commissioned an ambient noise survey of the area. The survey was performed using Larson Davis sound level meters, which recorded  $L_{eq}$ ,  $L_1$ ,  $L_{10}$ ,  $L_{50}$ , and  $L_{90}$  noise measurements, as well as  $L_{max}$ , and  $L_{min}$ .

The applicant's noise survey included two long-term noise measurements conducted on weekdays in August 2000. The first long-term measurement (LT-1) was a 29-hour measurement taken in a San Bruno residential neighborhood just west of US 101 (west of the project site). The measurement at this location indicated a minimum one-hour  $L_{90}$  value of 45 dBA (in the hour beginning at 2 a.m.). The second long-term measurement (LT-2) was a 21-hour measurement taken in South San Francisco in an industrial/commercial area (north of the project site). The measurement at this location indicated a minimum  $L_{90}$  value of 51 dBA (in the hour beginning at 3 a.m.). The noise in both locations was dominated by traffic on the freeways and local streets and aircraft activity from SFIA. Both locations had calculated CNEL levels of 68 dBA.

The applicant's noise survey also included two short-term noise measurements conducted on Wednesday, August 2, 2000. The first short-term noise measurement (ST-1, for 10 minutes beginning at 12:10 pm) was on the west side of US 101, more than a mile north of the project site. This site was in a residential area overlooking

the airport and the project site. Traffic on US 101 was the prominent source of noise ranging from 55 to 60 dBA. Aircraft takeoffs from SFIA produced maximum noise levels between 55 and 64 dBA. The average noise level was 59 dBA  $L_{eq}$ .

The second short-term noise measurement (ST-2, for 10 minutes beginning at 12:40 pm) was at the SAMTRANS maintenance facility, directly north of the project site. This location is approximately 300 feet from the centerline of North Access Road and 700 feet from the existing UCI plant. The operation of the UCI plant generated steady noise between 64 and 66 dBA. Aircraft noise produced maximum noise levels between 65 and 70 dBA. The average measured noise level was 65 dBA  $L_{eq}$ .

## IMPACTS

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Project noise impacts can be created by construction, and by normal operation of the power plant.

### PROJECT SPECIFIC IMPACTS — CONSTRUCTION

#### *COMMUNITY EFFECTS*

Construction noise is a temporary phenomenon (although very common at SFIA in recent years); the construction period for the UGGPP facility is scheduled to last approximately 5 months (El Paso 2000c). Construction of an industrial facility such as a power plant is typically and unavoidably noisier than what is usually permissible under noise ordinances. In order to allow the construction of new facilities, construction noise during certain hours is commonly exempt from enforcement by local ordinances.

The applicant is proposing a construction schedule from 7 a.m. to 7 p.m., 7 days a week. The applicant has estimated construction noise levels in a very conservative manner (without inclusion of attenuation provided by intervening buildings and other natural terrain obstructions) and found that the maximum increase in noise background levels ( $L_{90}$ ) from general construction would be about 1.4 dBA or less at the nearest noise-sensitive receptors in San Bruno, and 0.4 dBA or less at the nearest noise-sensitive receptors in South San Francisco (El Paso 2000c). As described on the next page under Power Plant Operation, the Energy Commission defines impacted areas as those that are affected by a 5 dBA increase in noise levels. Since these increases are less than 5 dBA, the impact from general construction would be less than significant to these communities.

The applicant also assessed the noise impact from pile driving. The applicant calculated the noise level from pile driving at off-site locations and found that the noise levels would be less than existing maximum noise levels at the nearest residences in San Bruno and similar or less than existing maximum noise levels in South San Francisco. Since these noise levels would not constitute a 5 dBA increase, the impact from pile driving activity would be less than significant to these communities.



Construction should have a minimal effect upon the Safe Harbor homeless shelter because the shelter only operates from November through March and shelter clients are onsite only from 5:00 p.m. to 7:00 a.m. daily. No clients will occupy the shelter during the daytime hours (San Mateo County 2000).

Noise effects from construction would further be reduced through the implementation of Conditions of Certification **NOISE-1**, **NOISE-2**, and **NOISE-5**.

### **STEAM BLOWS**

Typically, the steam blows create the loudest noise encountered during construction, inherent in building any project incorporating a steam turbine. However, this project has no steam turbine and will not include steam blows.

### **LINEAR FACILITIES**

The project does not include the construction of off-site linear facilities.

### ***WORKER EFFECTS***

The applicant acknowledges the need to protect construction workers from noise hazards as well as the applicable LORS relating to worker health and safety. As per the California Occupational Safety and Health Administration regulations (Cal-OSHA), the maximum noise level over an 8-hour work period is 90 dBA. Areas above 85 dBA need to be posted as high noise level areas and appropriate hearing protection will be required. UGGPP will also adopt a hearing conservation program in accordance with the Cal-OSHA §5097 Hearing Conservation Program. This section is located within Subchapter 7, General Industry Safety Orders, Group 15, Occupational Noise, Article 105.

With proper execution of the Hearing Conservation Program, as well as with the implementation of proposed Condition of Certification **NOISE-3**, no occupational safety impacts are anticipated from occupational noise.

## **PROJECT SPECIFIC IMPACTS — OPERATION**

### ***COMMUNITY EFFECTS***

The applicant has used noise measurement information from a similar LM-6000 plant in operation to prepare contours for the UGGPP facility. Compared to noise levels that occur from other airport operations and from US 101, the noise levels from the plant operations will be minimal. The 50 dBA maximum noise level contour occurs at a distance of 1,000 to 1,400 feet from the power plant (depending on whether the distance is to the side of the power plant or in an on-axis direction) and the 50 dBA CNEL contour is 1,900 to 2,700 feet from the power plant. Except for the Safe Harbor homeless shelter, the nearest sensitive receptors would be exposed to levels at or below 45 dBA when the plant is in operation. As described earlier, Safe Harbor was recently constructed to be compatible within the noisy environment where it is located. The maximum noise level (the level that would represent the noise level when the plant is generating electricity) from UGGPP at

Safe Harbor should be about 60 decibels, the 60-decibel noise contour level corresponds to a distance (to the side) of 450 feet (Papadimos 2000).

## **POWER PLANT OPERATION**

During its operating life, the UGGPP would be a peaking power plant presenting a steady, continuous noise source when it is operating. As described in the AFC, this plant would be operational between the months of June and October for a three year period.

The primary noise source anticipated from the proposed facility is the combustion turbine. Secondary noise sources are step-up transformers, fuel gas compressors, air compressors, and various pumps.

The Energy Commission defines the area impacted by the proposed project as that area where there is a potential increase in existing noise levels of 5 dBA or more during operation of the project. Typically, the Energy Commission requires that the 5 dBA be compared against the lowest one-hour  $L_{90}$  value, which is usually during nighttime hours where sleep interference is a factor.

Staff evaluated whether the proposed power plant would add an additional 5 dBA increase in noise levels above what the existing power plant and other sources are producing in the area. It is unlikely that the power plant will result in 5 dBA increases above the background at any sensitive receptors. The 50 dBA contour from this project ( $L_{max}$ ) occurs within a location that is already within the 70 dBA contour from aircraft operation. It should be noted that the 50 dBA contour was generated under conservative assumptions (i.e., no noise shielding from the UAL Maintenance Facility or other natural barriers) and would be considered a worst-case noise level. Therefore, the noise generated from UGGPP will not have a significant effect on the local noise environment.

It is staff's view that post-construction noise monitoring would not be necessary at the sensitive receptors since the power plant operations should not be audible above the background noise levels.

## **TONAL AND INTERMITTENT NOISES**

One possible source of annoyance at power plants is strong tonal noises, individual sounds that, while not louder than permissible levels, stand out in sound quality. However, due to the distance the site is from the sensitive receptors, tonal and intermittent noises are also not expected to be significant for this project, and monitoring is not recommended.

## **WORKER EFFECTS**

The applicant recognizes the need to protect plant operating and maintenance personnel from noise hazards, and commits to comply with applicable LORS. A measure to be implemented for noise-related impacts includes a Hearing Conservation Program. With proper execution of the Hearing Conservation Program, as well as with the implementation of proposed Condition of Certification **NOISE-4**, no occupational safety impacts are anticipated from operational noise.

## CUMULATIVE IMPACTS

Section 15130 of the CEQA Guidelines requires a discussion of cumulative environmental impacts when they are evaluated as being significant. Cumulative impacts are defined as those impacts that are created because of the combination of the project evaluated in the EIR together with other projects causing related impacts. The CEQA Guidelines require that the discussion reflect the severity of the impacts and the likelihood of their occurrence, but need not provide as much detail as the discussion of the impacts attributable to the proposed project alone. The CEQA Guidelines also mandate two different ways in which cumulative impacts are to be evaluated. One of these mandated approaches is to summarize growth projections in an adopted General Plan or in a prior certified environmental document. The second method involves compilation of a list of past, present, and probable future projects producing related or cumulative impacts. The second method has been utilized for the purposes of this Staff Assessment.

Future projects near the project site are limited to industrial developments. This development is associated with the 570 MW combined cycle power project (Phase II of the project), the SFO Airport Rail Transit System, and a parking lot structure across North Access Drive.

The 570-MW project will be designed by the applicant to meet the same requirements used for the UGGPP Project. Operations of the 570-MW project would not occur in the same timeframe as the UGGPP Project. Similarly, it is anticipated that the SFO Airport Rail Transit System project would be subjected to a similar level of environmental review to meet local and CEQA noise requirements. The parking lot structure project would be anticipated to increase noise levels in the immediate vicinity and not affect noise levels at distant noise-sensitive receptors (i.e., residences in the City of San Bruno and City of South San Francisco).

Operational noise for the proposed project would not increase existing noise levels at sensitive receptors in the area. When noise from the other projects identified in the cumulative analysis is taken into account, overall noise levels may increase but they would not be as a result of the UGGPP Project. The contribution of this project to any cumulative noise increases would not be significant (i.e., much less than 1 dB) (El Paso 2000c).

## FACILITY CLOSURE

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Upon closure of the facility, all operational noise will cease; no further adverse impacts from operation will be possible. The remaining potential noise source will be that caused by dismantling of the structures and equipment, and any site restoration work that may be performed. Since this noise will be similar to that caused by the original construction of the UGGPP, it can be treated similarly. That is, noisy work can be performed during daytime hours, with machinery and equipment properly equipped with mufflers. Any noise LORS then in existence would apply; applicable Conditions of Certification included in the Energy Commission Decision would also apply unless properly modified.

## CONCLUSIONS AND RECOMMENDATIONS

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### CONCLUSIONS

Staff concludes that the UGGPP would likely be built and operated to comply with all applicable noise laws, ordinances, regulations and standards. Staff further concludes that the UGGPP would likely present no significant adverse noise impacts.

### RECOMMENDATIONS

Staff recommends that the following proposed Conditions of Certification be adopted to ensure compliance with all applicable noise LORS and implementation of the applicant's proposed mitigation measures.

### PROPOSED CONDITIONS OF CERTIFICATION

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**NOISE-1** At least 15 days prior to the start of project-related ground disturbing activities, the project owner shall notify all residents and business owners within one-half mile of the site, by mail or other effective means, of the commencement of project construction. At the same time, the project owner shall establish a telephone number for use by the public to report any undesirable noise conditions associated with the construction and operation of the project. If the telephone is not staffed 24 hours per day, the project owner shall include an automatic answering feature, with date and time stamp recording, to answer calls when the phone is unattended. This telephone number shall be posted at the project site during construction in a manner visible to passersby. This telephone number shall be maintained until the project has been operational for at least one year.

**Verification:** The project owner shall transmit to the Energy Commission Compliance Project Manager (CPM) in the first Monthly Construction Report following the start of project-related ground disturbing activities, a statement, signed by the project manager, attesting that the above notification has been performed, and describing the method of that notification. This statement shall also attest that the telephone number has been established and posted at the site.

**NOISE-2** Throughout the construction and operation of the project, the project owner shall document, investigate, evaluate, and attempt to resolve all project-related noise complaints.

**Protocol:** The project owner or authorized agent shall:

- use the Noise Complaint Resolution Form (see Exhibit 1, below, for example), or functionally equivalent procedure acceptable to the CPM, to document and respond to each noise complaint;
- attempt to contact the person(s) making the noise complaint within 24 hours;

- conduct an investigation to determine the source of noise related to the complaint;
- if the noise is project related, take all feasible measures to reduce the noise at its source; and
- submit a report documenting the complaint and the actions taken. The report shall include: a complaint summary, including final results of noise reduction efforts; and if obtainable, a signed statement by the complainant stating that the noise problem is resolved to the complainant's satisfaction.

**Verification:** Within 30 days of receiving a noise complaint, the project owner shall file a copy of the Noise Complaint Resolution Form, or similar instrument approved by the CPM, with the San Francisco Airport Commission, the applicable city where the noise complaint originated, and with the CPM, documenting the resolution of the complaint. If mitigation is required to resolve a complaint, and the complaint is not resolved within a 30-day period, the project owner shall submit an updated Noise Complaint Resolution Form when the mitigation is finally implemented.

**NOISE-3** Prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM for review a noise control program. The noise control program shall be used to reduce employee exposure to high noise levels during construction and also to comply with applicable OSHA and Cal-OSHA standards.

**Verification:** At least 30 days prior to the start of project-related ground disturbing activities, the project owner shall submit to the CPM the above referenced program. The project owner shall make the program available to OSHA upon request.

**NOISE-4** The project owner shall conduct an occupational noise survey to identify the noise hazardous areas in the facility. The survey shall be conducted within 30 days after the facility is in full operation, and shall be conducted by a qualified person in accordance with the provisions of Title 8, California Code of Regulations, sections 5095-5099 (Article 105) and Title 29, Code of Federal Regulations, section 1910.95. The survey results shall be used to determine the magnitude of employee noise exposure. The project owner shall prepare a report of the survey results and, if necessary, identify proposed mitigation measures that will be employed to comply with the applicable California and federal regulations.

**Verification:** Within 30 days after completing the survey, the project owner shall submit the noise survey report to the CPM. The project owner shall make the report available to OSHA and Cal-OSHA upon request.

**NOISE-5** Noisy construction work (that which causes offsite annoyance, as evidenced by the filing of a legitimate noise complaint) shall be restricted to 7 a.m. to 7 p.m.

**Verification:** The project owner shall transmit to the CPM in the first Monthly Construction Report a statement acknowledging that the above restrictions will be observed throughout the construction of the project.

**EXHIBIT 1 - NOISE COMPLAINT RESOLUTION FORM**

United Golden Gate Power Project (Phase I)  
(00-AFC-5)

**NOISE COMPLAINT LOG NUMBER** \_\_\_\_\_

Complainant's name and address:

Phone number: \_\_\_\_\_

Date complaint received: \_\_\_\_\_

Time complaint received: \_\_\_\_\_

Nature of noise complaint:

Definition of problem after investigation by plant personnel:

Date complainant first contacted: \_\_\_\_\_

Initial noise levels at 3 feet from noise source \_\_\_\_\_ dBA Date: \_\_\_\_\_

Initial noise levels at complainant's property: \_\_\_\_\_ dBA Date: \_\_\_\_\_

Final noise levels at 3 feet from noise source: \_\_\_\_\_ dBA Date: \_\_\_\_\_

Final noise levels at complainant's property: \_\_\_\_\_ dBA Date: \_\_\_\_\_

Description of corrective measures taken:

Complainant's signature: \_\_\_\_\_ Date: \_\_\_\_\_

Approximate installed cost of corrective measures: \$ \_\_\_\_\_

Date installation completed: \_\_\_\_\_

Date first letter sent to complainant: \_\_\_\_\_ (copy attached)

Date final letter sent to complainant: \_\_\_\_\_ (copy attached)

This information is certified to be correct:

Plant Manager's Signature: \_\_\_\_\_

(Attach additional pages and supporting documentation, as required).

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## **NOISE APPENDIX A**

### **FUNDAMENTAL CONCEPTS OF COMMUNITY NOISE**

To describe noise environments and to assess impacts on noise sensitive area, a frequency weighting measure, which simulates human perception, is customarily used. It has been found that A-weighting of sound intensities best reflects the human ear's reduced sensitivity to low frequencies and correlates well with human perceptions of the annoying aspects of noise. The A-weighted decibel scale (dBA) is cited in most noise criteria. Decibels are logarithmic units that conveniently compare the wide range of sound intensities to which the human ear is sensitive. Noise Table A1 provides a description of technical terms related to noise.

Noise environments and consequences of human activities are usually well represented by an equivalent A-weighted sound level over a given time period ( $L_{eq}$ ), or by day and night levels ( $L_{dn}$ ) with measured nighttime sound levels adjusted upward by 10 dBA. Noise levels are generally considered low when ambient levels are below 45 dBA, moderate in the 45-to 60 dBA range, and high above 60 dBA. Outdoor day-night sound levels vary over 50 dBA depending on the specific type of land use. In wilderness areas, the  $L_{dn}$  noise levels average approximately 35 dBA, 50 dBA in small towns or wooded residential areas, 65 to 75 dBA in major metropolis downtown (e.g., Los Angeles), and 80 to 85 dBA near freeways and airports. Although people often accept the higher levels associated with very noisy urban residential and residential-commercial zones, they nevertheless are considered to be levels of noise adverse to public health.

Various environments can be characterized by noise levels that are generally considered acceptable or unacceptable. Lower levels are expected in rural or suburban areas than what would be expected for commercial or industrial zones. Nighttime ambient levels in urban environments are about seven decibels lower than the corresponding average daytime levels. The day-to-night difference in rural areas away from roads and other human activity can be considerably less. Areas with full-time human occupation that are subject to nighttime noise, which does not decrease relative to daytime levels, are often considered objectionable. Noise levels above 45 dBA at night can result in the onset of sleep interference effects (USEPA 1971). At 70 dBA, sleep interference effects become considerable.

In order to help the reader understand the concept of noise in decibels (dBA), NOISE Table A2 has been provided to illustrate common noises and their associated dBA levels.

<b>NOISE Table A1</b> <b>Definition of Some Technical Terms Related to Noise</b>	
<b>Terms</b>	<b>Definitions</b>
Decibel, dB	A unit describing the amplitude of sound, equal to 20 times the logarithm to the base 10 of the ratio of the pressure of the sound measured to the reference pressure, which is 20 micropascals (20 micronewtons per square meter).
Frequency, Hz	The number of complete pressure fluctuations per second above and below atmospheric pressure.
A-Weighted Sound Level, dB	The sound pressure level in decibels as measured on a Sound Level Meter using the A-weighting filter network. The A-weighting filter de-emphasizes the very low and very high frequency components of the sound in a manner similar to the frequency response of the human ear and correlates well with subjective reactions to noise. All sound levels in this testimony are A-weighted.
L1, L10, L50, L90, Lmax, Lmin	The A-weighted noise levels that are exceeded 1%, 10%, 50%, and 90% of the time, respectively, during the measurement period. L90 is generally taken as the background noise level. The Lmax is the highest recorded noise measurement during a particular time period and the Lmin is the lowest recorded noise measurement during a time period.
Equivalent Noise Level $L_{eq}$	The energy average A-weighted noise level during the Noise Level measurement period.
Community Noise Equivalent Level, CNEL	The average A-weighted noise level during a 24-hour day, obtained after addition of 5 decibels to levels in the evening from 7 p.m. to 10 p.m. and after addition of 10 decibels to sound levels in the night between 10 p.m. and 7 a.m.
Day-Night Level, $L_{dn}$	The Average A-Weighted noise level during a 24-hour day, obtained after addition of 10 decibels to levels measured in the night between 10 p.m. and 7 a.m.
Ambient Noise Level	The composite of noise from all sources, near and far. The normal or existing level of environmental noise at a given location.
Intrusive Noise	That noise that intrudes over and above the existing ambient noise at a given location. The relative intrusiveness of a sound depends upon its amplitude, duration, frequency, and time of occurrence and tonal or informational content as well as the prevailing ambient noise level.
Source: California Department of Health Services 1976.	

<b>NOISE Table A2</b> <b>Typical Environmental and Industry Sound Levels</b>			
Source and Given Distance from that Source	A-Weighted Sound Level in Decibels (dBA)	Environmental Noise	Subjectivity/ Impression
Civil Defense Siren (100')	140-130		Pain Threshold
Jet Takeoff (200')	120		
Very Loud Music	110	Rock Music Concert	Very Loud
Pile Driver (50')	100		Very Loud
Ambulance Siren (100')	90	Boiler Room	Very Loud
Freight Cars (50')	85		
Pneumatic Drill (50')	80	Printing Press Kitchen with Garbage Disposal Running	Loud
Freeway (100')	70		Moderately Loud
Vacuum Cleaner (100')	60	Data Processing Center Department Store/Office	
Light Traffic (100')	50	Private Business Office	Quiet
Large Transformer (200')	40		
Soft Whisper (5')	30	Quiet Bedroom	
	20	Recording Studio	
	10		Threshold of Hearing
Source: Peterson and Gross 1974			

### ***Subjective Response to Noise***

The adverse effects of noise on people can be classified into three general categories:

- Subjective effects of annoyance, nuisance, dissatisfaction.
- Interference with activities such as speech, sleep, and learning.
- Physiological effects such as anxiety or hearing loss.

The sound levels associated with environmental noise, in almost every case, produce effects only in the first two categories. Workers in industrial plants can experience noise effects in the last category. There is no completely satisfactory way to measure the subjective effects of noise, or of the corresponding reactions of annoyance and dissatisfaction, primarily because of the wide variation in individual tolerance of noise.

One way to determine a person's subjective reaction to a new noise is to compare the level of the existing (background) noise, to which one has become accustomed,

with the level of the new noise. In general, the more the level or the tonal variations of a new noise exceed the previously existing ambient noise level or tonal quality, the less acceptable the new noise will be, as judged by the exposed individual.

With regard to increases in A-weighted noise levels, knowledge of the following relationships (Kryter 1970) can be helpful in understanding the significance of human exposure to noise.

1. Except under special conditions, a change in sound level of one dB cannot be perceived.
2. Outside of the laboratory, a 3-dB change is considered a barely noticeable difference.
3. A change in level of at least five dB is required before any noticeable change in community response would be expected.
4. A 10-dB change is subjectively heard as an approximate doubling in loudness and almost always causes an adverse community response.

### **Combination of Sound Levels**

People perceive both the level and frequency of sound in a non-linear way. A doubling of sound energy (for instance, from two identical automobiles passing simultaneously) creates a three dB increase (i.e., the resultant sound level is the sound level from a single passing automobile plus three dB). The rules for decibel addition used in community noise prediction are:

<b>NOISE Table A3</b> <b>Addition of Decibel Values</b>	
When two decibel values differ by:	Add the following amount to the larger value
0 to 1 dB	3 dB
2 to 3 dB	2 dB
4 to 9 dB	1 dB
10 dB or more	0
Figures in this table are accurate to $\pm 1$ dB.	

Source: Thumann, Table 2.3

### **Sound and Distance**

- Doubling the distance from a noise source reduces the sound pressure level by 6 dB.
- Increasing the distance from a noise source ten times reduces the sound pressure level by 20 dB.

### **Worker Protection**

OSHA noise regulations are designed to protect workers against the effects of noise exposure, and list permissible noise level exposure as a function of the amount of time to which the worker is exposed:

**NOISE: Table A4**  
**OSHA Worker Noise Exposure Standards**

Duration of Noise (Hrs/day)	A-Weighted Noise Level (dBA)
8.0	90
6.0	92
4.0	95
3.0	97
2.0	100
1.5	102
1.0	105
0.5	110
0.25	115

Source: OSHA Regulation

# **VISUAL RESOURCES**

Testimony of Eric Knight

## **SUMMARY**

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Energy Commission staff analyzed both the potential visual impacts of the proposed United Golden Gate Power Project Phase I (UGGPP) and the compliance of the project with applicable laws, ordinances, regulations, and standards. Staff concludes that the project's impacts on visual resources would not be significant. Staff also concludes that the project would comply with applicable laws, ordinances, regulations, and standards.

## **INTRODUCTION**

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Visual resources are the natural and cultural features of the environment that can be viewed. This analysis focuses on whether UGGPP would cause significant adverse visual impacts and whether the project would be in conformance with applicable laws, ordinances, regulations, and standards. The determination of the potential for significant impacts to visual resources resulting from the proposed project is required by the California Environmental Quality Act (CEQA) Public Resources Code section 21000 et seq. and Title 20, California Code of Regulations, section 1701 et seq<sup>1</sup>. The determination of the conformance of the proposed project with applicable laws, ordinances, regulations, and standards is required by Public Resources Code section 25525.

## **ORGANIZATION OF ANALYSIS**

This analysis is organized as follows:

- Description of analysis methodology;
- Description of applicable laws, ordinances, regulations and standards;
- Assessment of the visual setting of the proposed power plant site;
- Evaluation of the visual impacts of the proposed project on the existing setting;
- Evaluation of compliance of the project with applicable laws, ordinances, regulations, and standards;
- Conclusions; and
- Recommendation of measures needed to mitigate any potential significant adverse impacts of the proposed project and to achieve compliance with applicable laws, ordinances, regulations, and standards.

## **ANALYSIS METHODOLOGY**

Visual resources analysis has an inherently subjective aspect. However, the use of generally accepted criteria for determining impact significance and a clearly

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<sup>1</sup> The California Energy Commission's power plant siting regulations.

described analytical approach aid in developing an analysis that can be readily understood.

## **SIGNIFICANCE CRITERIA**

Commission staff considered the following criteria in determining whether a visual impact would be significant.

### **STATE**

The CEQA Guidelines defines a “significant effect” on the environment to mean a “substantial, or potentially substantial, adverse change in any of the physical conditions within the area affected by the project including . . . objects of historic or aesthetic significance. (Cal. Code Regs., tit.14, § 15382.)

Appendix G of the Guidelines, under Aesthetics, lists the following four questions to be addressed regarding whether the potential impacts of a project are significant.

1. Would the project have a substantial adverse effect on a scenic vista?
2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?
3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?
4. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

### **LOCAL**

Energy Commission staff considers any local goals, policies, or designations regarding visual resources. Conflicts with such laws, ordinances, regulations, and standards can constitute significant visual impacts. See the section on Applicable Laws, Ordinances, Regulations, and Standards.

### **PROFESSIONAL STANDARDS**

Professionals in visual impact analysis have developed a number of questions as a means of evaluating the potential significance of visual impacts (see, e.g., Smardon 1986). The questions listed below address issues commonly raised in visual analyses for energy facilities. Staff considers these questions in assessing whether a project would cause a significant impact in regard to any of the four CEQA criteria listed above.

- Will the project substantially alter the existing viewshed, including any changes in natural terrain?
- Will the project deviate substantially from the form, line, color, and texture of existing elements of the viewshed that contribute to visual quality?
- Will the project eliminate or block views of valuable visual resources?



- Will the project result in significant amounts of backscatter light into the nighttime sky?
- Will the project be in conflict with directly-identified public preferences regarding visual resources?
- Will the project result in a significant reduction of sunlight, or the introduction of shadows, in areas used extensively by the community?
- Will the project result in a substantial visible exhaust plume?

### **KEY OBSERVATION POINTS**

Key Observation Points<sup>2</sup>, or KOPs, are used to help in the evaluation of project impacts by comparing the appearance of the project before and after construction from each of the locations selected. KOPs include locations that are chosen to be representative of the most critical areas from which the project may be seen.

### **EVALUATION PROCESS**

For each view area, staff considered the existing visual setting and the visual changes that the project would cause to determine impact significance. Energy Commission staff conducted several site visits and verified that the four KOPs selected by the applicant, with the inclusion of a fifth KOP suggested by staff, are representative of the view areas and are appropriate for this analysis.

### **ELEMENTS OF THE VISUAL SETTING**

To assess the existing visual setting, staff considered the following elements:

#### ***Visual Quality***

Visual quality is the value of visual resources. This analysis used an approach that considers visual quality as ranging from outstanding to low. A visual quality rating of outstanding is reserved for landscapes that would be what a viewer might think of as “picture postcard” landscapes. Low visual quality describes landscapes that are often dominated by visually discordant human alterations, and do not provide views that people would find inviting or interesting (Buhyoff et al., 1994).

#### ***Visual Sensitivity***

Visual sensitivity is a measurement of the level of interest or concern of viewers regarding the visual resources in an area. Official statements of public values and goals reflect viewers’ expectations regarding a visual setting. This analysis also employed land use as an indicator of viewer sensitivity. Uses associated with 1) designated parks, monuments, and wilderness areas, 2) scenic highways and corridors, 3) recreational areas, and 4) residential areas are considered to be highly sensitive. Agricultural areas are considered to have moderate visual sensitivity. Travelers on other highways and roads, including those in agricultural areas, are considered to have moderate sensitivity. Commercial uses, including business parks, are generally moderately sensitive, but some commercial developments have

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<sup>2</sup> The use of KOPs or similar view locations is common in visual resource analysis. The US Bureau of Land Management and the US Forest Service use such an approach.

specific requirements related to visual quality, such as landscaping, building height limitations, building design, and prohibition of above-ground utility lines, that indicate high visual sensitivity. Large-scale industrial uses are typically the least sensitive because workers are focused on their work, and generally are working in surroundings with relatively low visual value.

### ***Visibility***

Visibility can differ substantially between view locations, depending on screening and the angle of view. The smaller the degree of screening, the higher a feature's visibility is. The closer the feature is to the center of the view area, the greater its visibility is. Visibility is also reduced by distance.

### ***Viewer Exposure***

The number of viewers, the duration of the view, and the distance affect the exposure of viewers to a view. Viewer exposure can range from having high values for all three factors, such as a foreground view from a large number of residences, to having low values for all three factors, such as a brief background view for a few travelers.

### ***Visual Susceptibility***

The level of susceptibility of a view area to impacts due to visual change depends on visual quality, viewer sensitivity, visibility, and viewer exposure.

## **TYPES OF VISUAL CHANGE**

To assess the visual changes that the project would cause, staff considered the following factors:

### ***Dominance***

One measure of visual change is scale dominance - the apparent size of an object relative to the visible expanse of the landscape and to the total field of view. Another measure of change is spatial dominance - the measure of the dominance of an object due to its location in the landscape. The level of dominance can range from subordinate to dominant.

### ***Contrast***

Visual contrast is evaluated in regard to the elements of color, form, line, and scale<sup>3</sup>. The degree of contrast can range from high to low.

### ***View Blockage***

View blockage is the blockage from view by the project of any previously visible components. Blockage of higher quality visual elements by lower quality elements causes adverse impacts. The degree of view blockage can range from strong to none.

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<sup>3</sup> Scale contrast is the scale of an object relative to other distinct objects or areas in the landscape.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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### **FEDERAL AND STATE**

The proposed project is located within the boundaries of the San Francisco International Airport (SFIA), which is owned by the City and County of San Francisco (CCSF). Thus, the project site is not subject to federal land management requirements. The only officially designated State Scenic Highway within the project viewshed is Interstate 280 (I-280) through the City of San Bruno. I-280 is located approximately 2.25 miles west of the project site. State planning law requires the preparation of a local scenic highway element to establish and protect scenic highways. Please see the discussion on the City of San Bruno General Plan below.

### **LOCAL**

#### ***CITY AND COUNTY OF SAN FRANCISCO***

##### **SAN FRANCISCO INTERNATIONAL AIRPORT TENANT IMPROVEMENT GUIDE**

The intent of the Tenant Improvement Guide is to act as a basic reference for airport staff, airport tenants, consultants, and contractors to plan, design, demolish, construct, and install improvements within the airport property, including all rentable land and building space.

#### ***CITY OF SOUTH SAN FRANCISCO***

##### **GENERAL PLAN/EAST OF 101 AREA PLAN**

The project site is located within the corporate limits of the City of South San Francisco and is included in the City's East of 101 Area Plan. The East of 101 Area Plan contains development policies related to visual resources, including building design, fencing, signs, and landscaping. As discussed in the **LAND USE** section of the Staff Assessment, since the airport property is owned by the CCSF, land use at SFIA is governed by CCSF and is not subject to the City of South San Francisco General Plan. Therefore, the policies in the East of 101 Area Plan are not applicable to the proposed project.

#### ***CITY OF SAN BRUNO***

##### **GENERAL PLAN**

The only policy in the City of San Bruno General Plan related to I-280 is Scenic Corridor Policy 20, which directs the City of San Bruno to support beautification efforts along Interstate 280. The project site is located in the City of South San Francisco, over 2 miles from I-280. The policy is not applicable to the project.

## PROJECT DESCRIPTION

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The following section describes the aspects of the project that may have the potential for significant visual impacts. Please refer to the **PROJECT DESCRIPTION** section of the Staff Assessment for a more complete discussion.

### POWER PLANT

The most visually prominent element of the power plant would be the 140-foot tall, 12-foot diameter exhaust stack. Other power plant facilities would include a 40-foot tall selective catalytic reduction (SCR) system, a 40-foot tall aqueous ammonia tank, and a 37-foot tall air filter. The AFC did not identify a precise color for the project structures, only that the power plant would be painted a color similar to other buildings in the area (El Paso 2000a, AFC p. 5.13-10). A construction laydown and parking area would be adjacent to the east side of the power plant site.

### LINEAR FACILITIES

There are no off-site linear facilities proposed for the project. The proposed power plant would interconnect to an existing substation at the adjacent United Cogeneration Inc. (UCI) facility. The project would receive natural gas and water from the existing UCI supply pipelines.

## SETTING

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### REGIONAL SETTING

The proposed UGGPP would be located on the western shore of the San Francisco Bay within the corporate limits of the City of South San Francisco. The project site is located approximately 3,000 feet east of U.S. 101 (Bayshore Freeway) within the boundaries of the San Francisco International Airport (SFIA). The airport is a dominant feature in the region. San Francisco Bay is to the east of the project area; to the north, west, and south are the highly urban areas of South San Francisco, San Bruno, and Millbrae. From these areas, the constant take-offs and landings of airplanes at SFIA are visible. The topography in South San Francisco ranges from below sea level in the area east of U.S. 101 to nearly 600 feet at the top of the western hillsides (SSF 1999). Topography in San Bruno ranges from the flatlands along San Francisco Bay to 800 feet at the top of the coastal ranges (San Bruno 1984). Land uses in the region are diverse. The surrounding hillsides north, west, and south of the project area are predominantly developed with residential uses. These areas have highly scenic views of San Francisco Bay and the hills across the bay.

### PROJECT AREA SETTING

The proposed power plant site is located on North Access Road, west of Coast Guard Road, at the north end of the SFIA. The project site is currently a United Airlines (UAL) employee parking lot. North Access Road borders the north side of the project site. North of the road is a grassy open space area. Marshes, formed by a small inlet of San Francisco Bay, are located in this area. Immediately to the

west of the project site is the United Airlines Maintenance Operations Center (UAL MOC). A parking lot and 20-foot high jet blast screens are located to the east of the project site. The area north of the project area and east of U.S. 101 is developed with commercial, office, technology parks, and industrial uses (SSF 1999). No residential uses are located in this area. The nearest residential area is located about 0.75 mile west of the site, and west of U.S. 101 in the City of San Bruno. From points along 7<sup>th</sup> Avenue in this residential area, approximately 28 feet of the project's exhaust stack would be visible above the UAL MOC. Visual quality from this view area toward the project site is very low because of the presence of freeways and industrial buildings and lack of views of the San Francisco Bay and hills. **VISUAL RESOURCES Figure 1** generally identifies the areas from which the project would be visible, also called the viewshed. As can be seen from the figure, the project would be visible, in varying degrees, from a broad geographic area. However, intervening structures, freeways, and vegetation would obstruct many of the views from this area.

### **VIEW AREAS AND KEY OBSERVATION POINTS**

The applicant identified four KOPs within the project area to represent the view areas most likely to be impacted by the project. At staff's request, a fifth KOP was established to represent the closest residential area, located approximately 1.75 miles northwest of the project site, with the least screened view of the site. Staff evaluated the project from the view areas represented by these KOPs. **VISUAL RESOURCES Figure 2** shows the location of the KOPs and the direction of view from each KOP.

### **NORTH ACCESS ROAD AND SAN FRANCISCO BAY TRAIL**

The closest view area accessible to the public is along North Access Road. A portion of the San Francisco Bay Trail is located on the peninsula that extends north from North Access Road into San Francisco Bay. A San Mateo County Transit District (SAM TRANS) bus facility is located on the peninsula. The trail travels around the peninsula and provides views of the bay. Views toward the site are also possible from points along the trail. Water, marshes, and grassy areas are visible in the foreground views toward the site from the trail. A homeless shelter, called Safe Harbor, was recently constructed within an employee parking lot of the SAM TRANS facility. According to the AFC, Safe Harbor would house 70 to 90 men and women between the hours of 5:00 p.m. and 7:00 a.m. during the winter months of November through March. No clients will occupy the shelter during other hours of the day or other months of the year (El Paso 2000a, p. 5.9-4). The view from Safe Harbor toward the site is similar to views from the trail toward the site. KOP 1 is located along the north shoulder of North Access Road east of the entrance driveway to the SAM TRANS bus facility. In the immediate foreground of the view from KOP 1 is North Access Road (see **VISUAL RESOURCES Figure 3a**). The project site is located in the foreground of the view at a distance of about 640 feet from KOP 1. A 100-foot tall, 736-foot long UAL airplane hangar dominates the foreground view. The central portion of the hangar is approximately 128 feet tall (El Paso 2000c, Data Response 61). The UCI facility is located in the right-hand portion of the photograph. The UCI facility includes a 45-foot tall exhaust stack and a 30.5-foot tall generator enclosure. Other power generation facilities range in

height from 13.5 feet to 24 feet (El Paso 2000c, Data Response 62). The hillsides to the west of the project site are visible in the far middleground.

### ***Visual Quality***

From KOP 1, the surrounding hillsides are visible. From points along the trail in the vicinity of KOP 1, views of the marshes and water are possible. However, due to the substantial presence of the UAL hangar and other airport-related structures, the UCI facility, and the large parking area, visual quality in the area of KOP 1 is considered low to moderate.

### ***Viewer Sensitivity***

North Access Road provides access to SFIA-related uses, including the UAL MOC, the SFIA sewage treatment facility, Nippon Cargo Airlines, and a Coast Guard facility, as well as the SAM TRANS bus facility. Because the primary travelers along North Access Road would be people driving to work within an industrial area, viewer sensitivity is considered low for these viewers. No trail user counts are available for the portion of the Bay Trail in the vicinity of KOP 1 (El Paso 2000c, Data Response 72). During a site visit conducted on a weekday at the lunch hour, staff observed about a half dozen people who appeared to work in the area walking and jogging along the trail. Ordinarily, recreational users are considered to have high viewer sensitivity. However, since people using the trail most likely work in the area, and the area is predominantly industrial, the expectations of these trail users would be lower, so viewer sensitivity is considered moderate. The use of the Safe Harbor homeless shelter is similar to the use of a motel. Commercial uses, including motels, are generally considered to have moderate sensitivity. However, because the shelter is located in a predominantly industrial area, and the occupants of the shelter primarily would be in the project area during the nighttime, viewer sensitivity is considered low to moderate.

### ***Visibility***

Views toward the power plant site from KOP 1 are unobstructed. The view distance is foreground. Therefore visibility is high from the KOP 1 area for westbound travelers along North Access Road and users of the trail. For occupants of Safe Harbor, visibility would be high during the daytime. Lighting impacts during nighttime hours are addressed later in this analysis.

### ***Viewer Exposure***

For travelers along North Access Road, people using the trail, and the occupants of Safe Harbor, the power plant site would be in the foreground distance. According to the AFC, approximately 10,000 employees use North Access Road each day, with fewer than 5,000 travelling past the project site (El Paso 2000a, AFC p. 5.13-6). This is a moderate to high number of viewers. The speed limit on North Access Road is 35 MPH. For people travelling east on North Access Road the view duration is very low because of intervening structures, so viewer exposure is low to moderate. For people travelling west, the site is in the primary field of view for a short duration, so exposure is moderate. For the low number of recreational users, view duration would be moderate, so viewer exposure for recreational users would

also be moderate. For the moderate number of occupants of Safe Harbor, view duration would be moderate, so viewer exposure would be moderate to high.

### ***Visual Susceptibility***

For the views from the KOP 1 area, visual quality is low to moderate and visibility is high. For travelers along North Access Road, viewer sensitivity is low, viewer exposure ranges from low-to-moderate to moderate, so visual susceptibility is moderate. For users of the Bay Trail, viewer sensitivity is moderate and view exposure is moderate, so visual susceptibility is moderate. For occupants of Safe Harbor, viewer sensitivity is moderate and viewer exposure is moderate to high, so visual susceptibility is moderate to high.

### **POINT SAN BRUNO AREA**

This view area was selected to be representative of views that would be seen from the water and from portions of the mixed industrial area north of the project site. Located at the top of Point San Bruno Knoll is Wind Harp Park, which is classified as a “mini-park” in the South San Francisco General Plan. The Wind Harp sculpture is visible from many areas in the City of South San Francisco. The park provides 270-degree views of San Francisco Bay. An area higher in elevation than the park, and without public access, blocks views from the park toward the project site. KOP 2, which represents the view area, is located on a small bluff adjacent to San Francisco Bay, behind a Pacific Bell storage facility at the end of Point San Bruno Boulevard. Industrial buildings are visible in the foreground of the view (see **VISUAL RESOURCES Figure 4a**). The project site is located across San Francisco Bay at a near middleground distance of about 1.25 miles from KOP 2. The UAL hanger is clearly visible in the view. Also visible are other UAL MOC buildings, the UCI facility, and the SAM TRANS facility. No water is visible in the photograph. At other locations in the vicinity of KOP 2, views of the water are possible in the direction of the project site. Also not visible in the photograph, but visible from other locations in the view area, is the SFIA sewage treatment facility. Visible in the far middleground view are residential areas on the surrounding hillsides. In the background of the view are the steeper, undeveloped hill slopes.

### ***Visual Quality***

While the highly developed nature of the waterfront and surrounding hillsides detract from overall visual quality, because the view area provides views of the water and hillsides, visual quality is considered moderate.

### ***Viewer Sensitivity***

KOP 2 is located in an area of mixed industrial uses, including warehouses, office buildings, and technology parks. The design treatments utilized on some of these buildings, such as the buildings in the foreground view from KOP 2, windows that offer views of the water, and the use of landscaping suggest an interest and concern regarding the visual resources of the area. Considering these factors, viewer sensitivity is moderate.

### ***Visibility***

The project site is located in the near middleground distance from KOP 2. The view toward the site from KOP 2 is partially obstructed by the industrial building in the foreground of the view. Many views of the project site from the area of KOP 2 would be screened due to existing structures, vegetation, and terrain. Views toward the site from the water, shoreline, and nearby buildings would not be obstructed. Considering the variation within this view area, visibility ranges from moderate to high.

### ***Viewer Exposure***

It is estimated that 1,000 people in the area of KOP 2 would have views of the project site (El Paso 2000a, AFC p. 5.13-7). This is a large number of viewers. Workers during the course of the day can see the project site, so duration of view is moderate to high. The view distance is near middleground. Considering these factors, viewer exposure for this view area is moderate to high.

### ***Visual Susceptibility***

For the view area represented by KOP 2, visual quality is moderate, visual sensitivity is moderate, visibility ranges from moderate to high, and visual exposure is moderate to high, so visual susceptibility is moderate to high.

## **CRESTMoor DRIVE RESIDENTIAL AREA**

This view area was chosen because it includes residences in the hills of the City of San Bruno west of the project site. KOP 3 is located at the corner of Crestmoor Drive and London Court. From KOP 3, the project site is located in the far middleground at a distance of about 3 miles. The view area ranges in distance from approximately 1.75 to 3 miles from the project site. Residences on London Court are located in the foreground view from KOP 3 (see **VISUAL RESOURCES Figure 5a**). The intensely urban areas of the cities of San Bruno and South San Francisco are visible in the middleground. The UAL MOC buildings and the SFIA are visible along the shoreline of San Francisco Bay. Point San Bruno is visible in the left-hand portion of the view. San Francisco Bay and the hills across the bay are in the background of the view. The view seen from KOP 3 is representative of views from Interstate 280, an officially designated State Scenic Highway.

### ***Visual Quality***

While the visual clutter of the highly urban areas of San Bruno and South San Francisco detracts from the overall scenic quality, the KOP area provides highly scenic views of San Francisco Bay and the hills across the bay. Visual quality is moderate to high.

### ***Viewer Sensitivity***

Because the view is from a residential area and a state scenic highway, viewer sensitivity is high.



## ***Visibility***

The distance between the view area and the project site ranges from middleground to far middleground (1.75 to 3 miles). The intervening UAL MOC buildings would screen almost the entire project from view. While the upper portion of the exhaust stack would be visible to southbound travelers along I-280 near the Westborough Boulevard and Sneath Lane Interchanges, the stack would not be in the primary field of view for these travelers. Trees within the median and along the edge of the highway would screen most views. Considering these factors, visibility is very low for residences and travelers.

## ***Viewer Exposure***

The project site is located in the middleground to far middleground distance. It is estimated that a large number of people in residences, possibly 10,000, will have a few of the project site similar to KOP 3 (El Paso 2000a, AFC p. 5.13-7). The view duration of the residences is long. Considering these factors, viewer exposure is moderate to high for residences. It is estimated that annual daily traffic is high on I-280. However, since the project site is a substantial distance from I-280, is not within the primary field of view of travelers, and the view duration would only be several seconds long, viewer exposure for travelers is considered low.

## ***Visual Susceptibility***

From this view area, visual quality is moderate to high and viewer sensitivity is high. For residences, visibility is very low and viewer exposure is moderate to high, so visual susceptibility is moderate. For travelers along I-280, visibility is very low and viewer exposure is low, so visual susceptibility is low to moderate.

## **SIGN HILL PARK**

According to the City of South San Francisco General Plan, Sign Hill is the City's only national historic landmark and its best-known feature. Sign Hill, which is visible from many areas in the City, has proclaimed the City's identity since 1891. The concrete letters ("South San Francisco The Industrial City") were installed in 1929. KOP 4 is located in Sign Hill Park, an open space area offering passive recreational opportunities (e.g., hiking), about 2.25 miles northwest of the project site. The KOP was selected to be representative of the view from Sign Hill Park and other parks in the elevated areas northwest and west of the project site. KOP 4 was also selected to be representative of the views from the residential areas in the vicinity of Sign Hill Park, which are located about 2 miles from the project site. In the foreground of the view from KOP 4 are trees in the park (see **VISUAL RESOURCES Figure 6a**). Visible in the middleground are the intensely developed areas of the cities of South San Francisco and San Bruno. The Bayshore Freeway is visible in the middleground. The project site is located in the far middleground of the view. The UAL MOC buildings and the SFIA are visible in the view. San Francisco Bay and the hills are in the background.

## ***Visual Quality***

While the visual clutter of the highly urban areas of San Bruno and South San Francisco detracts from the overall scenic quality, the KOP area provides highly

scenic views of San Francisco Bay and the surrounding hillsides. Visual quality is moderate to high.

### ***Viewer Sensitivity***

Because KOP 4 represents views from recreational and residential areas, viewer sensitivity is high.

### ***Visibility***

The distance between KOP 4 and the project site is approximately 2.25 miles. The existing UCI facility would screen the lower portions of the project; however, the majority of the exhaust stack would be visible. Considering these factors, visibility is moderate.

### ***Viewer Exposure***

From KOP 4, the project site is located in the far middleground distance. A large number of residences will have a view of the project site similar to KOP 4. The view duration of the residences is long. No statistics are available on daily or annual usage of Sign Hill Park (El Paso 2000c, Data Response 67). Considering these factors, viewer exposure is moderate to high.

### ***Visual Susceptibility***

From KOP 4, visual quality is moderate to high, viewer sensitivity is high, visibility is moderate, and viewer exposure is moderate to high, so visual susceptibility is moderate to high.

## **SPRUCE AVENUE RESIDENTIAL AREA**

This view area was selected to represent views from the nearest residential area with the least screened view toward the project site (CEC 2000a, Data Requests 68-71). KOP 5, which represents this view area, is located just north of the intersection of Park Way and Spruce Avenue in the City of South San Francisco. KOP 5 is located about 1.75 miles northwest of the project site. In the immediate foreground view are residences located on Spruce Avenue (see **VISUAL RESOURCES Figure 7a**). In the near middleground are residential and commercial uses in the City of South San Francisco. The Bayshore Freeway is visible in the middleground. The project site is located in the far middleground, just to the left of the UAL hangar. The San Francisco Bay and hillsides are in the background.

### ***Visual Quality***

Although the KOP area provides views of San Francisco Bay and the surrounding hillsides, visual quality is reduced by the prominence of industrial development along the shoreline, the airport, and the Bayshore Freeway. Considering these factors, visual quality is moderate.

### ***Viewer Sensitivity***

Because KOP 5 represents residential views of the project site, viewer sensitivity is high.

### ***Visibility***

The distance from the view area to the project site is approximately 1.75 miles. The existing UCI facility would block the lower portions of the project for most viewers; however the majority of the exhaust stack would be visible. Some viewers would have unobstructed views of the project. Considering these factors, visibility is moderate.

### ***Viewer Exposure***

The project site is located in the middleground distance. It is estimated that a large number of people in residences, possibly 12,500, will have a view of the project site similar to KOP 5 (El Paso 2000c, Data Response 71). The view duration of the residences is long. Considering these factors, viewer exposure is moderate to high.

### ***Visual Susceptibility***

From the view area represented by KOP 5, visual quality is moderate, viewer sensitivity is high, visibility is moderate, and viewer exposure is moderate to high, so visual susceptibility is moderate to high.

## **IMPACTS**

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### **PROJECT SPECIFIC IMPACTS**

#### ***CONSTRUCTION IMPACTS***

Construction of the project is expected to take 120 days from the start of site preparation (El Paso, 2000a, p. 3.8-1). A portion of the UAL MOC parking lot adjacent to the project site would be used as a laydown area for construction materials and parking area for construction personnel. The project does not require construction of any off-site linear facilities. The project site and laydown area are sufficiently distant from residences and construction would be short term (lasting less than one year), so visual impacts due to construction would not be significant. Construction activities would be visible to people driving along North Access Road, walking along the San Francisco Bay Trail, and to occupants of the Safe Harbor homeless shelter. Staff has found that the operations impacts of the project to be less than significant for these viewers, so the short-term visual impacts due to construction would also be less than significant. For more information please see the following discussion.

#### ***OPERATIONS IMPACTS***

As discussed earlier, the nearest residential area is located about 0.75 mile west of the project site. However, because visual quality is very low and most of the project

would be screened from view, the potential for impacts to this area is very low, so staff did not select a KOP to represent this area.

#### **NORTH ACCESS ROAD AND SAN FRANCISCO BAY TRAIL**

**VISUAL RESOURCES Figure 3b** shows the view from KOP 1 with the proposed project simulated in the view. Because topography, structures, or vegetation does not screen the view of the site, the entire project would be visible. Energy Commission staff has determined that the simulation of the project is inaccurate. The stack would actually appear taller than shown, with approximately 60 feet of the stack skylined above the UAL hangar.

#### ***Contrast with Structures***

The vertical form and straight line of the exhaust stack would appear similar to the form and line of the existing light poles and fence posts in the view from KOP 1. The horizontal form and straight line of the other project components would appear similar to the form and line of the UAL hanger and UCI facilities. Therefore, contrast with existing structures in regard to form and line would be low. The AFC states that the power plant would be painted a color similar to other buildings in the area (El Paso 2000a, p. 5.13-10). Staff has proposed a condition of certification requiring the project to be treated with a non-reflective finish and color to blend with the surroundings. With proper implementation of this mitigation measure, staff would expect that the project would cause a low level of contrast with the color of existing structures. Except for the exhaust stack, the project would appear much smaller than the UAL hangar and comparable in size to the UCI facility. The exhaust stack would appear noticeably taller than the UAL hangar. Overall, scale contrast with existing structures would be moderate. In summary, from the view area represented by KOP 1 contrast with existing structures would be low in regard to form, line, and color, and moderate in regard to scale.

#### ***Contrast with Vegetation***

Vegetation visible in the view from KOP 1 toward the site (as shown in **VISUAL RESOURCES Figure 3b**) includes grasses and weeds along the edge of North Access Road. Trees on the surroundings hillsides area visible as patches of dark green. Vegetation visible in foreground views from the trail toward the site includes grasses, shrubs, and a few trees. The strong vertical form of the exhaust stack would create high contrast with the predominantly horizontal form of the shrubs and grasses and rounded form of the trees. The straight line of the project would create high contrast with the irregular line of the vegetation. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with the green tones of the vegetation. The exhaust stack would appear much taller than the trees and other vegetation, so scale contrast would be high. In summary, if no existing structures were visible, contrast with vegetation would be high in regard to form, line, and scale, and moderate in regard to color. However, because existing structures have already created high form, line, and scale contrast with the existing vegetation, the increment of form, line, and scale contrast that the project would create would be moderate rather than high.

### ***Contrast with Land***

From KOP 1 the landform in the foreground view is flat and composed of a road and parking lot. The land forms a horizontal band. The landform in the far middleground is the undulating form of the hillsides. The vertical form of the exhaust stack would cause high contrast in regard to form. The remaining components of the project are predominantly horizontal and would cause low contrast in regard to form. Overall, contrast with form would be moderate. The land contains straight lines in the foreground and the mildly undulating line of the hills on the horizon. The straight line of the project would cause moderate contrast with the line of the land. The project would be painted to blend in with existing structures. Thus, the project would contrast moderately with the color of the hillsides, and contrast would be low with the color of the road and parking lot. Although the exhaust stack would appear taller than the hillsides, the project would appear much smaller than the entire landform, so scale contrast is moderate. In summary, if no existing structures were visible, contrast with land would be moderate in regard to form, line, and scale; and low to moderate in regard to color. However, because existing structures have already created high form, line, and scale contrast with land, the increment of form, line, and scale contrast that the project would create would be low rather than moderate.

### ***Contrast with Water***

No water is visible in the view from KOP 1. From the trail in the vicinity of KOP 1, water is visible in southeasterly views toward the site. The form and line of the water are irregular, so the rectilinear form and straight lines of the project would cause high contrast with the water in regard to form and line. The project would be similar in scale to the water, so scale contrast would be low. Contrast with the color of the water would be low. Because existing structures have already created high form and line contrast with the water, the increment of form and line contrast that the project would create would be moderate rather than high.

### ***Scale Dominance***

The project would be of considerable size, but would occupy only a moderate part of the setting. Therefore, scale dominance would be subordinate.

### ***Spatial Dominance***

The spatial composition of the view from the view area represented by KOP 1 is feature because the UAL hangar dominates the view. This would tend to draw the observer's eye toward the project site. Therefore, the project would be prominent in regard to composition. Because the project would be at approximately the same elevation as the viewer, the project would be evident in regard to position. A substantial part of the exhaust stack would be backdropped by sky, but only a moderate part of the entire project would be skylined above the hangar. Therefore, spatial dominance in regard to backdrop would be evident. The overall spatial dominance rating would be co-dominant.

### ***View Blockage***

From the view area represented by KOP 1, the project would block a small part of the sky, but none of the surrounding hillsides. The UAL hangar and other buildings already block more of the view than the project would, so the visual change caused by the project would not be substantial. Therefore, view blockage would be negligible.

### ***Severity of Visual Change***

From the view area represented by KOP 1, the project would cause moderate levels of contrast, scale dominance would be subordinate and therefore moderate, spatial dominance would be co-dominant and therefore moderate, and view blockage would be negligible. Therefore, the severity of visual change would be moderate.

### ***Visual Impact***

From the view area represented by KOP 1, the severity of the visual change caused by the project would be moderate. Since visual susceptibility to impact from KOP 1 is moderate for travelers along North Access Road and for Bay Trail users, the visual impact would be less than significant. Since visual susceptibility for occupants of Safe Harbor is moderate to high, the visual impact would be less than significant.

## **POINT SAN BRUNO AREA**

**VISUAL RESOURCES** Figure 4b shows the view from KOP 2 with the proposed project simulated in the view. From the view area represented by KOP 2, nearly all of the proposed power plant structures are visible.

### ***Contrast with Structures***

The vertical form of the exhaust stack would cause moderate contrast with the generally horizontal form of the existing structures. Other project components would appear horizontal and cause low contrast. Overall, contrast with form would be moderate. Line contrast with existing structures would be low. The applicant has stated that the project would be painted to blend in with existing structures. Staff has proposed a condition of certification to ensure this. With proper implementation of this mitigation measure, staff would expect that the project would cause a low level of contrast with the color of existing structures. The exhaust stack would appear only slightly taller than the UAL hangar, but much smaller in total mass. Other project components would appear much smaller than the hangar. Overall, scale contrast with existing structures would be low. In summary, from the view area represented by KOP 2 contrast with structures would be moderate in regard to form and low in regard to line, color and scale.

### ***Contrast with Vegetation***

Vegetation visible in the view from KOP 2 toward the site consists of dry grass, weeds, and wild flowers in the foreground, and trees (visible as dark green patches) on the surrounding hillsides. The form and line of the vegetation are irregular. The rectilinear form and straight lines of the proposed exhaust stack would cause high contrast with the vegetation in regard to form and line. The project would be

painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with the green tones of the trees and tan tones of the grasses. The vegetation in the foreground would appear much larger than the project, so scale contrast with vegetation would be low. In summary, contrast with vegetation would be high in regard to form and line; moderate in regard to color; and low in regard to scale. Because existing structures have already created high form and line contrast with the existing vegetation, the increment of form and line contrast that the project would create would be moderate rather than high.

### ***Contrast with Land***

From the view area represented by KOP 2 the land forms a horizontal band. The line of the horizon is slightly undulating. The vertical form of the stack and the rectilinear form of the remaining project components would cause a moderate level of contrast with the horizontal form of the land. The straight lines of the project would cause moderate contrast with the slightly undulating line of the horizon. The color of the proposed structures would contrast moderately with the color of the hillsides. The project would appear smaller than the hillsides, so scale contrast would be low. In summary, contrast with land would be moderate in regard to form, line, and color, and low in regard to scale.

### ***Contrast with Water***

No water is visible in the view from KOP 2. The form and line of the water visible from some viewing locations in the vicinity of KOP 2 is irregular. The vertical form of the stack and the rectilinear form of the remaining project components would cause a high level of contrast with the irregular form and line of the water. The color of the proposed structures would contrast moderately with the color of the water. The project would appear smaller than the large expanse of water, so scale contrast would be low. In summary, contrast with water would be high in regard to form and line, moderate in regard to color, and low in regard to scale. Because existing structures have already created high form and line contrast with the water, the increment of form and line contrast that the project would create would be moderate rather than high.

### ***Scale Dominance***

The project would appear very small in comparison to the wide field of view, and would occupy a very small part of the setting. Therefore, scale dominance from KOP 2 would be negligible.

### ***Spatial Dominance***

Because the spatial composition of the view from the view area represented by KOP 2 is panoramic, the project would be evident in regard to composition. Because the project would be at approximately the same elevation as much of the view area, the project would be evident in regard to position. Because the visible portions of the project would be backdropped by existing buildings and hills, spatial dominance in regard to backdrop would be inconspicuous. Therefore, the overall spatial dominance rating is co-dominant.

### ***View Blockage***

From the view area represented by KOP 2, the project would block a small part of the UAL hangar. The project would also block a very small part of the hillside. Because the project would block a very small part of the moderate quality view, view blockage would be negligible.

### ***Severity of Visual Change***

From KOP 2, the project would cause moderate levels of contrast, scale dominance would be negligible, spatial dominance would be co-dominant and therefore moderate, and view blockage would be negligible. Therefore, the severity of the visual change would be moderate.

### ***Visual Impact***

Since visual susceptibility to impact from the Point San Bruno view area is moderate to high, and the severity of the visual change caused by the project would be moderate, the visual impact would be less than significant.

## **CRESTMoor DRIVE RESIDENTIAL AREA**

**VISUAL RESOURCES** Figure 5b shows the view from KOP 3 with the proposed project simulated in the view. From KOP 3, only the upper 40 feet of the exhaust stack would be visible.

### ***Contrast with Structures***

The vertical form and straight line of the visible portion of the exhaust stack would appear similar to the form and line of the existing utility and lamp poles on London Court and the vertical pillars of the UAL hangar. The applicant has stated that the project would be painted to blend in with existing structures. Staff has proposed a condition of certification to ensure this. With proper implementation of this mitigation measure, staff would expect that the project would cause a low level of contrast with the color of existing structures. Although the stack would extend slightly above the roof of the UAL hangar, the project would appear very small because of the mass of the hangar, so scale contrast would be low. In summary, from the view area represented by KOP 3 contrast with structures would be low in regard to form, line, color, and scale.

### ***Contrast with Vegetation***

Vegetation visible in the view from KOP 3 toward the site consists of bushes and small trees in the front yards of homes on London Court, and larger trees in the backyards of these homes. Trees in the middleground of the view are visible as dark green patches. The form and line of the vegetation are irregular. The vertical form and straight line of the exhaust stack would contrast with the irregular form of the vegetation, but the project is barely distinguishable from this distance so the level of form and line contrast would be low. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with the color of the vegetation. The distance to the project would make the project seem smaller in size than the vegetation in the foreground, so scale



contrast would be low. In summary, contrast with vegetation would be moderate in regard to color and low in regard to form, line, and scale.

### ***Contrast with Land/Water***

The form and line of the land and water are irregular. The vertical form and straight line of the exhaust stack would contrast with the irregular form and line of the land and water, but the project is barely distinguishable from this distance so the level of form and line contrast would be low. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with existing colors. The project would appear very small in relation to the expansiveness of the bay and the large landforms, so scale contrast would be low. In summary, contrast with water and land would be moderate in regard to color and low in regard to form, line, and scale.

### ***Scale Dominance***

The project would appear very small in comparison to the wide field of view, and would occupy a very small part of the setting. Therefore, scale dominance from the view area represented by KOP 3 would be negligible.

### ***Spatial Dominance***

The spatial composition of the view from KOP 3 is indistinct because of the variety of features in the vicinity of the project site, therefore the spatial dominance of the project in regard to composition would be inconspicuous. Because the view area is higher in elevation than the project, the project would be inconspicuous in regard to position. Because a small portion of the exhaust stack would be backdropped by water, spatial dominance in regard to backdrop would be evident. Overall spatial dominance would be subordinate.

### ***View Blockage***

From the view area represented by KOP 3, the project would block a very small part of a moderate to high quality view. Therefore, view blockage would be weak.

### ***Severity of Visual Change***

From the view area represented by KOP 3, the project would cause moderate levels of contrast, scale dominance would be negligible, spatial dominance would be subordinate and therefore weak, and view blockage would be weak. Therefore, the severity of the visual change would be moderate.

### ***Visual Impact***

For the view area represented by KOP 3, the severity of the visual change would be moderate. Since visual susceptibility to impact is moderate for residences, the visual impact would be less than significant. Since visual susceptibility is low to moderate for travelers along I-280, the visual impact also would be insignificant.

## **SIGN HILL PARK**

**VISUAL RESOURCES Figure 6b** shows the view from KOP 4 in Sign Hill Park with the proposed project simulated in the view. From KOP 4, the lower portions of the proposed power plant structures would be screened from view by existing structures. The majority of the proposed exhaust stack would be visible.

### ***Contrast with Structures***

The project would appear similar to other tall and narrow structures in the view, so contrast in regard to form and line would be low. Staff has proposed a condition of certification requiring the project to be painted to blend in with the surroundings. With proper implementation of this mitigation measure, contrast with color would be low. Although the project would appear taller than the UAL hangar, overall it would appear small in comparison because of the mass of the hangar, so scale contrast would be low. In summary, from the view area represented by KOP 4 contrast with structures would be low in regard to form, line, color, and scale.

### ***Contrast with Vegetation***

Vegetation visible in the view from KOP 4 toward the site consists of dry grass, wild flowers, shrubs, and trees in the foreground, and trees in the middleground. The form and line of the vegetation are irregular. The strong vertical form and straight line of the stack would cause high contrast with the irregular form of the vegetation. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with the color of the vegetation. The distance to the project would make the project seem smaller in size than the vegetation in the foreground, so scale contrast would be low. In summary, contrast with vegetation would be high in regard to form and line, moderate in regard to color, and low in regard to scale. Because existing structures have already created high form and line contrast with vegetation, the increment of form and line contrast that the project would create would be moderate rather than high. In addition, the substantial distance of the project from KOP 4 would further reduce the increment of contrast, so contrast with vegetation would be low.

### ***Contrast with Land/Water***

The form and line of the land and water are irregular. The strong vertical form and straight line of the stack would cause high contrast with land and water in regard to form and line. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with existing colors. The project would appear very small in relation to the expansiveness of the bay and the large landforms, so scale contrast would be low. In summary, contrast with water and land would be high in regard to form and line, moderate in regard to color, and low in regard to scale. Because existing structures have already created high form and line contrast with land and water, the increment of form and line contrast that the project would create would be moderate rather than high. In addition, the substantial distance of the project from KOP 4 would reduce the increment of contrast, so contrast with land and water would be low.

### ***Scale Dominance***

The project would appear very small in comparison to the wide field of view, and would occupy a very small part of the setting. Therefore, scale dominance from KOP 4 would be negligible.

### ***Spatial Dominance***

The spatial composition of the view from KOP 4 is indistinct because of the variety of features in the vicinity of the project site, therefore the spatial dominance of the project in regard to composition would be inconspicuous. Because the view area is higher in elevation than the project, the project would be inconspicuous in regard to position. Because a small portion of the project would be backdropped by water, spatial dominance in regard to backdrop would be evident. Overall spatial dominance would be subordinate.

### ***View Blockage***

From KOP 4 the project would block a very small part of the moderate to high quality view. Therefore, view blockage would be weak.

### ***Severity of Visual Change***

From KOP 4, the project would cause low levels of contrast, scale dominance would be negligible, spatial dominance would be subordinate and therefore weak, and view blockage would be weak. Therefore, the severity of the visual change would be weak.

### ***Visual Impact***

From KOP 4 visual susceptibility to impact is high and severity of impact would be weak, so the visual impact would be less than significant.

## **SPRUCE AVENUE RESIDENTIAL AREA**

**VISUAL RESOURCES** Figure 7b shows the view from KOP 5 with the proposed project simulated in the view. From KOP 5, the lower portions of the proposed power plant structures would be screened from view by existing structures. The majority of the proposed exhaust stack would be visible.

### ***Contrast with Structures***

The project would appear similar to other tall and narrow structures in the view, including the brick chimney attached to the house in the foreground, so contrast in regard to form and line would be low. Staff has proposed a condition of certification requiring the project to be painted to blend in with the surroundings. With proper implementation of this mitigation measure, contrast with color would be low. Although the project would appear taller than the UAL hangar, overall it would appear small in comparison because of the mass of the hangar, so scale contrast would be low. In summary, from the view area represented by KOP 5 contrast with structures would be low in regard to form, line, color, and scale.

### ***Contrast with Vegetation***

Vegetation visible from the view area represented by KOP 5 toward the project site includes trees in the foreground and middleground. The form and line of the vegetation are irregular. The strong vertical form and straight line of the proposed exhaust stack would create high contrast with the form and line of the vegetation. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with the color of the vegetation. The project would appear the same size or smaller than the vegetation, so scale contrast would be low. In summary, contrast with form and line would be high, contrast with color would be moderate, and scale contrast would be low. Because existing structures have already created high form and line contrast with vegetation, the increment of form and line contrast that the project would create would be moderate rather than high. In addition, the substantial distance of the project from KOP 5 would further reduce the increment of contrast, so contrast with vegetation would be low.

### ***Contrast with Land/Water***

The vertical form of the stack would cause high contrast with the horizontal band of the land. The straight line of the stack would cause moderate contrast with the somewhat irregular line of the land. The vertical form of the stack would cause high contrast with the horizontal band of the water. The straight line of the stack would cause low contrast with the nearly straight line of the water. The project would be painted to blend in with existing structures. Thus, staff would expect that the project would contrast moderately with existing colors. The project would appear very small in relation to the expansiveness of the bay and the large landforms, so scale contrast would be low. In summary, contrast with land would be high in regard to form and moderate in regard to line; contrast with water would be high in regard to form and low in regard to line. Contrast with color would be moderate and low in regard to scale. Because existing structures have already created high form contrast with land and water, the increment of form contrast that the project would create would be moderate rather than high. In addition, the substantial distance of the project from KOP 5 would further reduce the increment of contrast, so contrast with land and water would be low.

### ***Scale Dominance***

The project would appear very small in comparison to the wide field of view, and would occupy a very small part of the setting. Therefore, scale dominance from the view area represented by KOP 5 would be negligible.

### ***Spatial Dominance***

The spatial composition of the view from KOP 5 is indistinct because of the variety of features in the vicinity of the project site, therefore the spatial dominance of the project in regard to composition would be inconspicuous. Because the view area is higher in elevation than the project, the project would be inconspicuous in regard to position. Because a small portion of the project would be backdropped by water, spatial dominance in regard to backdrop would be evident. Overall spatial dominance would be subordinate.

### ***View Blockage***

From the view area represented by KOP 5 the project would block a very small part of the moderate to high quality view. Therefore, view blockage would be weak.

### ***Severity of Visual Change***

From the view area represented by KOP 5, the project would cause low levels of contrast, scale dominance would be negligible, spatial dominance would be subordinate and therefore weak, and view blockage would be weak. Therefore, the severity of the visual change would be weak.

### ***Visual Impact***

From the view area represented by KOP 5, the susceptibility to visual impact is moderate to high and the severity of impact would be weak, so the visual impact would be less than significant.

## ***LIGHTING***

The AFC states that lights required by the Federal Aviation Administration (FAA) for aviation safety would be located on the exhaust stack. However, the FAA determined that the project would not be a hazard to air navigation, so marking and lighting of the stack would not be necessary for aviation safety. As explained in a Data Response 80, the statement in the AFC was written prior to the FAA's determination (El Paso 2000c). Consequently, the applicant would not install any special lighting or markings on the stack. Staff has proposed a condition of certification to ensure this. The applicant has proposed measures to reduce lighting impacts of the project, and Energy Commission staff has expanded these measures in a proposed condition of certification. Proper implementation of these measures is expected to minimize lighting and keep lighting impacts to less than significant levels.

## ***VISIBLE WATER VAPOR PLUMES***

Power plants that utilize "wet" cooling towers have the potential to cause visible vapor plumes created by the condensation of water in the plumes of moist air emitted from the cooling towers. The project would use air cooling instead of wet cooling towers so no potential exists for visible plume formation from cooling. Energy Commission staff has determined that there is no potential for visible plume formation from the exhaust stack considering the high temperature of the exhaust (850° Fahrenheit) and the normal range of weather conditions at the project site (Walters 2000). Therefore, visual impacts from visible water vapor plumes would be insignificant. Due to the high temperature of the exhaust, other less obvious visible phenomena, such as visible heat distortion effects, may be possible. Staff does not expect significant visual effects from potential heat distortion effects.

## **CONSIDERATION OF IMPACTS IN RELATION TO CEQA SIGNIFICANCE CRITERIA**

This analysis considered the potential impacts of the proposed project in relation to the four significance criteria for visual resource impacts listed in Appendix G of the CEQA Guidelines, under Aesthetics, and specified below.

1. Would the project have a substantial adverse effect on a scenic vista?

As explained previously in this analysis, staff does not expect that the project would have a substantial adverse effect on scenic vistas, such as Wind Harp Park or Sign Hill Park. Therefore, the project would not cause a significant visual impact in regard to this criterion.

2. Would the project substantially damage scenic resources, including, but not limited to, trees, rock outcroppings, and historic buildings within a state scenic highway?

Interstate 280 is an officially designated State Scenic Highway. As explained previously in this analysis, the project would not substantially damage scenic resources within this state scenic highway.

3. Would the project substantially degrade the existing visual character or quality of the site and its surroundings?

As explained previously in this analysis, staff does not expect that the project would substantially degrade the existing visual character or quality of the site and its surroundings.

4. Would the project create a new source of substantial light or glare which would adversely affect day or nighttime views in the area?

The project as mitigated would not create a new source of substantial light or glare that would adversely affect nighttime or daytime views in the area.

## **CUMULATIVE IMPACTS**

Existing urbanization has substantially affected the project viewshed. The contribution of the project to adverse visual impacts in the area would be minimal and therefore would not contribute substantially to a significant cumulative impact.

## **FACILITY CLOSURE**

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### **INTRODUCTION**

There are at least three circumstances in which a facility closure can take place, planned closure, unexpected temporary closure, and unexpected permanent closure.

## **PLANNED CLOSURE**

The applicant plans to replace Phase I of UGGPP with a combined-cycle power plant within three years. The applicant will submit a separate Application for Certification for the replacement facility. If the Energy Commission approves the replacement project, the decision will include all necessary and appropriate conditions of certification for the replacement of Phase I with a combined-cycle facility, including the eventual closure of the replacement facility. If the replacement facility is not certified, the applicant will be required to prepare a closure plan that addresses removal of the Phase I power plant structures to reduce visual impacts.

## **UNEXPECTED TEMPORARY CLOSURE**

Unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency. No special conditions regarding visual resources are expected to be required to address temporary closure.

## **UNEXPECTED PERMANENT CLOSURE**

Unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned. The contingency plan that the project owner is required to prepare should address removal of the power plant structures to reduce visual impacts.

## **COMPLIANCE WITH LAWS, ORDINANCES, REGULATIONS, AND STANDARDS**

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### **LOCAL**

#### ***CITY AND COUNTY OF SAN FRANCISCO***

##### **SAN FRANCISCO INTERNATIONAL AIRPORT TENANT IMPROVEMENT GUIDE**

The applicant has also stated that the project will adhere to the design elements specified in the SFIA Tenant Improvement Guide. Requirements related to visual resources included landscaping, fencing, lighting, and signage. Specific requirements include the following:

Section 303.1.A. Open Space Development: Spaces generated between structures and other improvements shall be developed with complete landscaping. Nature and scope of such improvements shall be commensurate with use of particular area and shall serve as integrating element between areas of mixed use both within site and between those contiguous therewith. Landscaping shall conform to requirements of Section 303.2.

Section 303.1.B. Landscaping: Interior as well as peripheral planting shall be required along with other amenities of open space development. Proposal of landscaping should be reviewed and approved before start of work to ascertain standards, including types of plants, in accordance with Airport Master Landscaping Plan. Planting shall be installed and maintained according to Standards under Section 511.

1. Unpaved slopes shall be erosion protected with suitable ground cover.
2. Landscape planting shall be required along all chain-link fencing which border a public thoroughway and installed at reasonable density and variety commensurate with landscaping standards and where appropriate for aesthetic reasons considering the tenant's proposed use of the land and where the physical environment is compatible to support plant life.

Section 303.1.C. Fences: The use of chain-link fencing in the immediate vicinity of buildings shall be restricted. Such fencing shall be permitted only in cases of obvious security needs, and where location and conditions preclude reasonable alternatives. Following guidelines shall be used in designing chain-link fencing where it is permitted in conjunction with buildings:

1. Consideration shall be given to incorporation of materials which match or complement adjacent building.
2. Slatted mesh fillers or other wire disguising devices shall be used where required by Technical Services Branch.
3. Pedestrian and vehicular gateways to Airport roads and rights-of-way shall be given special treatment.

Section 303.1.E. Signing: All signs shall conform to standards set forth under Section 303.3.

Section 303.1.F. Illumination: Exterior lighting installations will be approved on the basis of visual and electronic compatibility with Airport operations.

Section 303.3.I.1. Exterior Signs: Proprietary signs for identification purposes shall be mounted on building walls only. Free standing directional signs for roads and walks shall be permitted within lease-lines. Such signs shall conform to setback regulations noted for buildings under Par. A (20 feet from Airport boundary lines, ten feet from common lease-line, and 25 feet from lease-line bounding taxiways), and shall be limited in height to twelve (12) feet.

- a. Size, proportion, materials, construction, and illumination shall be subject to Airport approval on an individual basis. Elaborate multi-colored, moving or flashing signs with exposed lamps are prohibited.
- b. Regulations governing construction project signs shall be as set forth under Part VI.



## Article 511. Landscaping:

Section 511.1. Ground: Planting areas shall have imported loam, adequate surface drainage, and provided with underground irrigation system. Portable irrigation shall be permitted only in cases where conditions render such underground irrigation system unfeasible.

Section 511.2 Planting: Scale, density, and extent shall be determined by nature of adjacent improvements, weather and sun exposure, and use of the site. Refer to Airport Landscape Master Plan.

- a. Quality nursery stock shall be equal to standards of the California Association of Nurserymen.
- b. Plants shall be grown in a climate similar to San Francisco Bay Area and selected on the basis of local Airport weather conditions.
- c. Deciduous trees and shrubs shall not be permitted.

Section 511.3 Maintenance: All landscaping shall be continuously maintained with plants receiving prescribed fertilization and scheduled watering.

Energy Commission staff has proposed conditions of certification (see below) that would ensure that all of these requirements are satisfied. Landscaping is addressed in VIS-5. Fencing is addressed in VIS-2. Illumination is addressed in VIS-3. Signage is addressed in VIS-4. With staff's proposed conditions of certification, the project would be expected to comply with the applicable requirements in the Tenant Improvement Guide.

## ***SOUTH SAN FRANCISCO***

### **EAST OF 101 AREA PLAN**

As discussed previously, the South San Francisco General Plan and the East of 101 Area Plan are not applicable to the project since the project is located in an area under the land use control of the CCSF. However, because the project would have a visual presence in an area of SSF covered by a plan that requires high quality design, and the Airport Commission encourages SSF's review and comment on projects at the airport, staff's proposed conditions of certification allow for SSF's review and comment.

## **MITIGATION**

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### **APPLICANT'S PROPOSED MITIGATION MEASURES**

The applicant has proposed the following mitigation measures to be incorporated into the project design to minimize visual impacts associated with the operation of the facility.

**VIS-1** The project will meet or exceed the applicable City of South San Francisco guidelines for project features such as structures, signs, and landscaping.

**VIS-2** The project proponent will consult with the Bay Conservation and Development Commission (BCDC) to ensure coordinated compliance with BCDC project-specific requirements and those of the City of South San Francisco.

**VIS-3** Exterior lighting will be limited to areas required by regulations, operations, and safety. Low-intensity lights will be used where allowed by regulations (e.g., site perimeter and parking areas). High intensity lighting will be limited to areas where such lighting is necessary for operations and safety concerns. A higher proportion of lighting will be directed and/or shielded to reduce glare towards sensitive viewers.

**VIS-4** The stack, building, and tank will be painted in a color which blends with existing surrounding buildings.

In addition, the applicant has proposed two other mitigation measures: 1) any fencing for the project will be non-reflective; and 2) a signage plan in compliance with SFIA regulations and City of South San Francisco zoning regulations related to signs.

Energy Commission staff generally agrees with the applicant's proposals. However, staff's position is that these proposals need to be more precisely developed in conditions of certification, which staff proposes below. As explained previously, South San Francisco's plans and ordinances are not applicable to the project. In addition, the San Francisco Bay Conservation and Development Commission (BCDC) has determined that the project is located outside of BCDC's 100-foot shoreline band jurisdiction (Lacko 2001). Therefore, BCDC's comments on the project would be advisory, not mandatory. BCDC has requested that their staff review the color treatment, lighting, and landscaping plans for the project. Staff's proposed conditions of certification allow for BCDC's, as well as South San Francisco's, comments on these plans.

## **CONCLUSIONS AND RECOMMENDATION**

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### **CONCLUSIONS**

Effective implementation of the applicant's proposed mitigation measures, as modified, expanded, and augmented by staff's recommendations, is expected to reduce all potential visual impacts due to the proposed project to less than significant levels. With the proposed mitigation, the project is also expected to be in compliance with applicable laws, ordinances, regulations, and standards regarding visual resources.

### **RECOMMENDATION**

The Energy Commission should adopt the following conditions of certification if it approves the project.

## PROPOSED CONDITIONS OF CERTIFICATION

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**VIS-1** Prior to first turbine roll, the project owner shall treat the project structures, stack, and tank visible to the public in a non-reflective finish and color to blend with the surroundings.

Protocol: The project owner shall submit a treatment plan for the project to the California Energy Commission Compliance Project Manager (CPM) for review and approval. The treatment plan shall include:

- specification, and 11" x 17" color simulations, of the treatment proposed for use on project structures, including structures treated during manufacture;
- a list of each major project structure, building, and tank, specifying the color(s) proposed for each item;
- documentation that a non-reflective finish will be used on all major project elements visible to the public;
- a detailed schedule for completion of the treatment; and,
- a procedure to ensure proper treatment maintenance for the life of the project.

The project owner shall also submit the treatment plan to the City of South San Francisco (SSF) and the San Francisco Bay Conservation and Development Commission (BCDC) for their review and comment.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall submit a revised plan to the CPM.

After approval of the plan by the CPM, the project owner shall implement the plan according to the schedule and shall ensure that the treatment is properly maintained for the life of the project.

For any structures that are treated during manufacture, the project owner shall not specify the treatment of such structures to the vendors until the project owner receives notification of approval of the treatment plan by the CPM.

The project owner shall not perform the final treatment on any structures until the project owner receives notification of approval of the treatment plan from the CPM.

The project owner shall notify the CPM within one week after all precolored structures have been erected and all structures to be treated in the field have been treated and the structures are ready for inspection.

**Verification:** At least 60 days prior to ordering the first structures that are color treated during manufacture, the project owner shall submit its proposed plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification, the project owner shall submit to the CPM a revised plan.

Not less than 30 days prior to the start of commercial operation, the project owner shall notify the CPM that all structures treated during manufacture and all structures treated in the field are ready for inspection.

The project owner shall provide a status report regarding treatment maintenance in the Annual Compliance Report.

**VIS-2** All fencing for the project shall be non-reflective. Fencing for the project shall comply with the applicable requirements in the San Francisco Airport Tenant Improvement Guide.

**Protocol:** Prior to ordering the fencing the project owner shall submit to the CPM for review and approval the specifications for the fencing documenting that such fencing will be non-reflective. The submittal to the CPM shall include evidence that the fencing meets the requirements of the San Francisco Airport Tenant Improvement Guide.

The project owner shall also submit the fencing specifications to the SSF and BCDC for review and comment.

If the CPM notifies the project owner that revisions of the specifications are needed before the CPM will approve the submittal, the project owner shall submit to the CPM revised specifications.

The project owner shall not order the fencing until the project owner receives approval of the fencing submittal from the CPM.

The project owner shall notify the CPM within one week after the fencing has been installed and is ready for inspection.

**Verification:** Prior to first turbine roll and at least 30 days prior to ordering the non-reflective fencing, the project owner shall submit the specifications to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after completing installation of the fencing that the fencing is ready for inspection.

**VIS-3** The project owner shall not install lighting on the exhaust stack, unless required by the Federal Aviation Administration or the San Francisco Airport Commission. Lighting shall comply with the San Francisco Airport Tenant Improvement Guide. Prior to first turbine roll, the project owner shall design and install all lighting such that light bulbs and reflectors are not visible from public viewing areas and illumination of the vicinity and the nighttime sky is minimized. To meet these requirements:

Protocol: The project owner shall develop and submit a lighting plan for the project to the CPM for review and approval. The lighting plan shall require that:

- No lighting is installed on the stack;
- Lighting is designed so that exterior light fixtures are hooded, with lights directed downward or toward the area to be illuminated and so that backscatter to the nighttime sky is minimized. The design of this outdoor lighting shall be such that the luminescence or light source is shielded to prevent light trespass outside the project boundary;
- High illumination areas not occupied on a continuous basis such as maintenance platforms or the main entrance are provided with switches or motion detectors to light the area only when occupied;
- A lighting complaint resolution form (following the general format of that in attachment 1) will be used by plant operations, to record all lighting complaints received and document the resolution of those complaints. All records of lighting complaints shall be kept in the on-site compliance file.

The submittal to the CPM shall include evidence that lighting complies with the San Francisco Airport Tenant Improvement Guide.

The project owner shall also submit the lighting plan to the SSF, BCDC, and the Airport Commission for review and comment.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the plan, the project owner shall prepare and submit to the CPM a revised plan.

Lighting shall not be installed before the plan is approved. The project owner shall notify the CPM when the lighting has been installed and is ready for inspection.

**Verification:** At least 60 days before ordering the exterior lighting, the project owner shall provide the lighting plan to the CPM for review and approval.

If the CPM notifies the project owner that any revisions of the plan are needed before the CPM will approve the plan, within 30 days of receiving that notification the project owner shall submit to the CPM a revised plan.

The project owner shall notify the CPM within seven days of completing exterior lighting installation that the lighting is ready for inspection.

**VIS-4** The project owner shall install signs, including construction signs, in conformance with the applicable requirements of San Francisco Airport Tenant Improvement Guide.

Protocol: The project owner shall submit a signage plan to the CPM for review and approval. The submittal shall include evidence that the plan meets the requirements of the San Francisco Airport Tenant Improvement Guide.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

Verification: Prior to first turbine roll and at least 30 days prior to installing the signs, the project owner shall submit a signage plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the signage plan are needed before the CPM will approve the plan, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after installation of the signs that the signs are ready for inspection.

**VIS-5** The project owner shall provide landscaping in conformance with the San Francisco Airport Tenant Improvement Guide.

Protocol: The project owner shall submit a landscaping plan to the CPM for review and approval. The submittal shall include evidence that the plan meets the requirements of the San Francisco Airport Tenant Improvement Guide.

The project owner shall also submit the landscaping plan to the SSF and BCDC for review and comment.

If the CPM notifies the project owner that revisions of the plan are needed before the CPM will approve the submittal, the project owner shall submit to the CPM a revised plan.

The project owner shall not implement the plan until the project owner receives approval of the submittal from the CPM.

**Verification:** Prior to first turbine roll and at least 60 days prior to installing the landscaping, the project owner shall submit the plan to the CPM for review and approval.

If the CPM notifies the project owner that revisions of the submittal are needed before the CPM will approve the submittal, within 30 days of receiving that notification, the project owner shall prepare and submit to the CPM a revised submittal.

The project owner shall notify the CPM within seven days after completing installation of the landscaping that the landscaping is ready for inspection.

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ATTACHMENT 1  
LIGHTING COMPLAINT RESOLUTION FORM

UNITED GOLDEN GATE POWER PROJECT PHASE I San Mateo County, California	
Complainant's name and address:	
Phone number:	
Date complaint received:	
Time complaint received:	
Nature of lighting complaint:	
Definition of problem after investigation by plant personnel:	
Date complainant first contacted:	
Description of corrective measures taken:	
Complainant's signature: _____	Date: _____
Approximate installed cost of corrective measures: \$ _____	
Date installation completed: _____	
Date first letter sent to complainant: _____ (copy attached)	
Date final letter sent to complainant: _____ (copy attached)	
This information is certified to be correct:	
Plant Manager's Signature: _____	

(Attach additional pages and supporting documentation, as required.)

**VISUAL RESOURCES Figures 1, 2, 3a, 3b, 4a, 4b, 5a, 5b, 6a, 6b, 7a, 7b**

# CULTURAL RESOURCES

Testimony of Gary Reinoehl

## INTRODUCTION

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This analysis discusses cultural resources that are defined as the evidence of the history of human development and life on earth. Evidence of California's early occupation is becoming increasingly vulnerable to the ongoing development and urbanization of the state.

Cultural resource materials may be found nearly anywhere in California: along the ocean coastline and on coastal islands; along rivers and streams; in coastal and inland valleys and lowlands; throughout the coastal and inland mountain ranges; and throughout the interior deserts. Cultural resources may be found on the ground or may be found at varying depths beneath the surface. In some areas of the state, a sequence of settlements on the same site may cover multiple layers of cultural resources. In other areas, the distribution of cultural materials may be much more dispersed.

Cultural resources are significant to our understanding of our culture, our history and heritage. Critical to the analysis of cultural resources are the spatial relationships between an undisturbed cultural resource site and the surface environmental resources and features, and the analysis of the locational context of the resource materials within the site and beneath the surface. These relationships provide information that can be used to piece together the sequence of human occupation and use of an area, and they begin to create a picture of the former inhabitants and their environment.

Staff's primary concerns in its cultural resource analysis are to ensure that all potential impacts are identified and that significant adverse impacts are avoided or reduced to a level of insignificance. The determination of potential impacts to cultural resources from the proposed United Golden Gate Power Plant, Phase I (UGGPP) is required by the Siting Regulations of the California Energy Commission (Energy Commission) and by the California Environmental Quality Act (CEQA). Three aspects of cultural resources are addressed in Staff's analysis: prehistoric archaeological resources, historic period resources, and ethnographic resources.

## CHAPTER 2 PREHISTORIC RESOURCES

Prehistoric archaeological resources are those resources that resulted from prehistoric human occupation and use of an area. Such resources include sites and deposits, structures, artifacts, rock art, and trails. In California the prehistoric period began over 11,500 years ago and extended into the 18th century when the Euro-Americans first explored and settled the region.

## CHAPTER 3 HISTORIC RESOURCES

Historic period resources are those resources that resulted from human activity after the beginning of a written historical record. In California the historic period began in

the 18<sup>th</sup> Century when Euro-Americans first explored and settled the region. Historic period resources include archaeological deposits, sites, structures, traveled ways, artifacts, documents, buildings and objects.

## **CHAPTER 4 ETHNOGRAPHIC RESOURCES**

Ethnographic resources are those resources important to the heritage of a particular ethnic or cultural group, such as Native Americans, African, European, or Asian immigrants. They may include traditional resource collecting areas, ceremonial sites, topographic features, cemeteries, shrines, or ethnic neighborhoods and structures.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)**

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Cultural resources are indirectly protected under provisions of the federal Antiquities Act of 1906 (Title 16, United States Code, Section 431-433) and subsequent related legislation, policies, and enacting responsibilities. The following laws, ordinances, regulations, standards, and policies apply to the protection of cultural and ethnographic resources in California. Projects licensed by the Energy Commission are reviewed for compliance with these laws.

## **CHAPTER 5 FEDERAL**

Federal Guidelines for Historic Preservation Projects: The US Secretary of the Interior has published a set of Standards and Guidelines for Archaeology and Historic Preservation. These are considered to be the appropriate professional methods and techniques for the preservation of archaeological and historic properties. The Secretary's standards and guidelines are used by federal agencies, such as the Forest Service, the Bureau of Land Management, and the National Park Service. The State Historic Preservation Office refers to these standards in its requirements for mitigation of impacts to cultural resources on public lands in California.

## **CHAPTER 6 STATE**

Public Resources Code, Section 5020.1 defines several terms, including the following:

(j) "Historical resource" includes, but is not limited to, any object, building, structure, site, area, place, record, or manuscript which is historically or archaeologically significant, or is significant in the architectural, engineering, scientific, economic, agricultural, educational, social, political, military, or cultural annals of California.

(k) "Substantial adverse change" means demolition, destruction, relocation, or alteration such that the significance of an historical resource would be impaired.

Public Resources Code, Section 5024.1 establishes a California Register of Historical Resources (CRHR); sets forth criteria to determine significance; defines eligible properties; and lists nomination procedures. The criteria are essentially the

same as those used to determine eligibility to the NRHP, but they also stipulate that some properties that may not retain sufficient integrity to meet NRHP standards may still be eligible for the California Register.

Public Resources Code, Section 5097.5 states that any unauthorized removal or destruction of archaeological or paleontological resources on sites located on public land is a misdemeanor. As used in this section, “public lands” means lands owned by, or under the jurisdiction of, the state; or any city, county, district, authority, or public corporation; or any agency thereof.

Public Resources Code, Section 5097.98 defines procedures for notification of discovery of Native American artifacts or remains and for the disposition of such materials. If the county coroner determines that the remains are Native American, the coroner is required to contact the Native American Heritage Commission, which is then required to determine the “Most Likely Descendant” to inspect the burial and to make recommendations for treatment or disposition of the remains and any associated burial items. This section also prohibits obtaining or possessing Native American artifacts or human remains taken from a grave or cairn and sets penalties for these actions.

The California Environmental Quality Act (CEQA) requires analysis of potential environmental impacts of proposed projects and requires application of feasible mitigation measures. CEQA also requires a program for monitoring or reporting on the revisions that the public agency has required in the project and the measures it has imposed to mitigate or avoid significant environmental effects.

Public Resources Code Section 21083.2 states that the lead agency determines whether a project may have a significant effect on “unique” archaeological resources; if so, an EIR shall address these resources. If a potential for damage to unique archaeological resources can be demonstrated, the lead agency may require reasonable steps to preserve the resource in place. Otherwise, mitigation measures shall be required as prescribed in this section. The section discusses excavation as mitigation; limits the applicant’s cost of mitigation; sets time frames for excavation; defines “unique and non-unique archaeological resources”; and provides for mitigation of unexpected resources.

Public Resources Code Section 21084.1 indicates that a project may have a significant effect on the environment if it causes a substantial adverse change in the significance of a historical resource; the section further defines a “historical resource” and describes what constitutes a “significant” historical resource.

CEQA Guidelines, Title 14, California Code of Regulations, Section 15126.4(b) prescribes the manner of maintenance, repair, stabilization, restoration, conservation, or reconstruction as mitigation of a project’s impact on a historical resource; discusses documentation as a mitigation measure; and discusses mitigation through avoidance of damaging effects on any historical resource of an archaeological nature, preferably by preservation in place, or by data recovery through excavation if avoidance or preservation in place is not feasible. Data recovery must be conducted in accordance with an adopted data recovery plan.

CEQA Guidelines, Title 14, California Code of Regulations, Section 15064.5 “Determining the Significance of Impacts on Historical and Unique Archeological Resource” defines the term “historical resources,” explains when a project may have a significant effect on historical resources, describes CEQA’s applicability to archaeological sites, and specifies the relationship between “historical resources” and “unique archaeological resources.” This section states that a project “that may cause a substantial adverse change in the significance of an historical resource is a project that may have a significant effect on the environment.” It also defines a substantial adverse change for historical resources.

CEQA Guidelines, Title 14, California Code of Regulations, Appendix G, Section V lists questions that are relevant to evaluating a project’s impacts on archaeological and historical resources.

Penal Code, Section 622 1/2 states that anyone who willfully damages an object or thing of archaeological or historic interest is guilty of a misdemeanor.

California Health and Safety Code, Section 7050.5 states that if human remains are discovered during construction, the project owner is required to contact the county coroner.

## **CHAPTER 7 LOCAL**

Although the Energy Commission has pre-emptive authority over local laws, it typically ensures compliance with local laws, ordinances, regulations, standards, plans, and policies. The San Francisco Airport Master Plan is the operational plan for the airport property (owned by the City and County of San Francisco). There are no special provisions for cultural resources in the San Francisco Airport Master Plan.

## **PROJECT DESCRIPTION**

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All of the project elements described in the **PROJECT DESCRIPTION** section of this Staff Assessment would cause ground disturbance and have the potential to cause impacts to any significant historical resources that may be discovered during excavation.

## **SETTING**

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## **CHAPTER 8 REGIONAL DESCRIPTION**

### ***NATURAL ENVIRONMENT***

The project site is located on the western shore of the San Francisco Bay, approximately 9.3 miles south southeast of the city of San Francisco. The site is within the central portion of the Coast Ranges Geomorphic Province that is characterized by a series of north to northwest trending mountains and valleys extending from the Oregon border to the Transverse Ranges in southern California.

The project site is within the limits of the San Francisco International Airport (SFIA), bounded on the east by San Francisco Bay and the west by lowlands of the San Francisco peninsula. The communities of South San Francisco (north), San Bruno (west), and Millbrae (southwest) surround the SFIA. The airport is located on a broad, flat area of fill that was placed on bay mud flats and estuarine deposits, extending out into open water. The elevation of the project site ranges from 3 to 8 feet above mean sea level (El Paso 2000a, AFC page 5.3-1).

Refer to the **PROJECT DESCRIPTION** section of this Staff Assessment for additional information and maps of the project development region and the project area.

## **CHAPTER 9 PREHISTORIC SETTING**

Archaeological literature indicates that early residents of California typically lived near water sources that could provide them with access to a wide variety of plant and animal resources. Several small drainages crossed north and south of the project area draining from the lowlands to the bay. Colma Creek, the largest creek in the area, empties into the bay a short distance north of the project area. Although traces of human occupation provide evidence for habitation in this area for at least 8,000 years, high-density population was characteristic in the last 2,000 years. These people were more adapted to the bay-shore and marsh environments (El Paso 2000a, AFC page 5.7-2, -3, and -4).

## **CHAPTER 10 ETHNOGRAPHIC BACKGROUND**

At the time of Spanish contact in 1770, the Costanoan people (also known as Ohlone) inhabited the area that extended from the central California Coast east to the Diablo Range. Speakers of Ramaytush or San Francisco Costanoan occupied the San Francisco peninsula, numbering about 1200 people in 1770. The people that lived in the project area were of the šipliškin tribelet (El Paso 2000a, AFC page 5.7-4 and -5).

The Costanoan people were greatly affected by contact with the Spanish. Between 1770 and 1797 seven missions were established in Costanoan territory. By 1810 there were no Costanoan tribelets living in an aboriginal existence. The population of the Costanoan people dropped from over 10,000 in 1770 to less than 2,000 by 1832. Secularization of the missions during the Mexican period had another dramatic effect on the native population. Many of the people went to work as laborers on the ranchos in the surrounding area. They were able to resume some of their cultural traditions in this more open environment. By the 1970s the number of descendants was estimated to be more than 200 (El Paso 2000a, AFC page 5.7-4 and -5).

## **CHAPTER 11 HISTORIC SETTING**

Spanish missionaries began their exploration and development of the missions in California in 1769 starting in San Diego and ending with the missions in San Rafael and Sonoma, in 1823. The Mission San Francisco de Assisi and the Presidio de San Francisco were both dedicated in 1776. Mexican rule of the area began in 1822. The project area was part of the Rancho Buri Buri, granted to the Jose

Antonio Sanchez family in 1827 and confirmed in 1835 (El Paso 2000a, AFC page 5.7-6).

The Treaty of Guadalupe Hidalgo transferred California to the United States in 1848. That political transition combined with the Gold Rush changed California into a rapidly transforming frontier. In 1860, D. O. Mills purchased the Buri Buri Rancho and had a mansion built on the property. An airport was developed on the property in the early part of the twentieth century. The city of San Francisco purchased the airfield property in 1930 (El Paso 2000a, AFC page 5.7-7 and -8).

## **CHAPTER 12 RESOURCES INVENTORY**

### ***LITERATURE AND RECORDS SEARCH***

Prior to preparation of the AFC, consultants to the applicant conducted a literature search and reviewed cultural resource records and maps at the Northwest Information Center of the California Historical Resources Information System (CHRIS). The literature search included the project site and areas within one-mile of the project site. Eight surveys have been conducted within the one-mile radius of the project site. A survey of the U.S. Coast Guard Air Station identified the USCG Air Station as eligible for the National Register as a district (El Paso 2000d, page 2 and 3). No other cultural resources were located during those surveys that were eligible for the California Register or the National Register. The record search did identify eighteen cultural resources that had been evaluated as not eligible for the National Register of Historic Places (El Paso 2000b).

The applicant also stated that three prehistoric sites are located approximately two miles north of the project area. The background information indicates that the project area is built on imported fill and there is a low probability of encountering prehistoric sites (El Paso 2000b).

### ***FIELD SURVEYS***

Archeologist George McKale conducted a phase 1 survey of the project area on September 19, 2000. Access to the property was not granted. The site area was viewed from through a fence from North Access Road. A one-mile radius around the project area was reviewed by automobile.

The current study area consists of a paved parking lot. The bank of the slough just north of the project area was inspected and approximately four feet of fill was observed over the native soils. A similar situation is expected for the project area. The area within a one-mile radius of the proposed power plant has been greatly disturbed by recent industrial buildings, roads, and highways, residences, and the San Francisco International Airport (El Paso 2000b).

### ***NATIVE AMERICAN CONTACTS***

In September of 2000, the consultant to the applicant contacted the Native American Heritage Commission (NAHC). This contact with the NAHC, and an inquiry to the Northwest Information Center of the California Historic Resources



Information System (CHRIS), failed to identify the location of any traditional Native American cultural properties in the project area. The applicant sent letters to representatives of the Native American community on September 22, 2000, but no responses were received. Telephone calls were also made to Native American contacts and no response was received (El Paso 2000b).

### ***SUMMARY OF PREVIOUSLY IDENTIFIED CULTURAL RESOURCES IN THE PROJECT VICINITY***

Eighteen cultural resources have been recorded within the one-mile radius of the project area that were evaluated as not meeting the eligibility requirements for the National Register of Historic Places (El Paso 2000b). The U.S. Coast Guard Air Station was determined to be eligible for the National Register of Historic Places as a district (El Paso 2000d, pages 2 and 3). All of these resources are built properties; none of them are archeological.

## **IMPACTS**

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Since project development and construction usually entail surface and sub-surface disturbance of the ground, a power plant project has the potential to adversely affect both known and previously unknown cultural resources. Direct impacts are those which may result from the immediate disturbance of resources, whether from vegetation removal, vehicle travel over the surface, earth-moving activities, or excavation, or alteration of the immediate surroundings. Indirect impacts are those which may result from increased erosion due to site clearance and preparation, or from inadvertent damage or outright vandalism to exposed resource materials due to improved accessibility. Cumulative impacts to cultural resources may occur if increasing amounts of land are cleared and disturbed for the development of multiple projects in the same vicinity as the proposed project.

The potential for the project to cause impacts to cultural resources is related to the likelihood that such resources are present and whether they are actually encountered during project development and construction activities. Although the existence of known cultural resources indicates further potential for unknown resources to be encountered, the absence of known resources does not necessarily mean that unknown resources will not be encountered and that impacts will therefore not occur. In addition, the potential for discovery does not measure the significance of individual artifacts or other cultural resources present, since it is impossible to accurately predict what specific materials could be encountered. Furthermore, sometimes the full significance of discovered cultural resources can only be determined after they have been collected, prepared, and studied by professional archaeologists.

## **CHAPTER 13 PROJECT IMPACTS**

Because project-related site development and construction would entail subsurface disturbance of the ground, the proposed project has the potential to adversely affect previously unknown cultural resources that might exist in the native soils. The applicant has indicated that about four feet of fill exists on top of the old ground surface (El Paso 2000b). Excavations are expected to be extending into the native

soil in portions of the project and previously unknown resources could be effected in these areas.

The presence of few known sites in the project vicinity indicates a low potential for previously unknown historic and prehistoric archeological resources to be encountered and affected during project construction.

The U.S. Coast Guard Air Station has been determined to be eligible for the National Register of Historic Places as a district. The station is about 1500 feet south-southwest of the project area. When the station was built there were only a few buildings in the vicinity. Two of the largest and closest buildings in 1955 appear to be aircraft hangers. By 1975, a couple of very large commercial and industrial buildings have been built to the north and west of the air station altering the air stations original setting. The proposed project will be visible from the station and in close proximity to one of these large commercial buildings. The addition of the power plant will be an additional minor change to the immediate surroundings of the U.S. Coast Guard Air Station. The change will not materially impair the eligibility of the U.S. Coast Guard Air Station district and will not constitute a substantial adverse change in the significance of this historical resource.

## **CHAPTER 14 CATEGORIZATION OF IDENTIFIED CULTURAL RESOURCES**

Various laws apply to the treatment of cultural resources. These laws require the Energy Commission to categorize resources by determining whether they meet several sets of specified criteria. These categories then in turn influence the analysis of potential impacts to the resources and the mitigation that may be required to ameliorate any such impacts.

Under federal law, only historical or prehistoric sites, objects, or features, or architectural resources that are assessed by a qualified researcher as “important” or “significant” in accordance with federal guidelines need to be considered regarding potential impacts. The significance of historical and prehistoric cultural resources is judged in accordance with the criteria for eligibility for nomination to the National Register of Historic Places as defined in 36 CFR 60.4. If such resources are determined to be significant, and therefore eligible for listing in the National Register, as well as the California Register, they are afforded certain consideration under the National Historic Preservation Act and/or CEQA.

The National Register criteria state that “eligible historic properties” are: districts, sites, building, structures, and objects that possess integrity of location, design, setting, materials, workmanship, feeling, and association, and (a) that are associated with events that have made a significant contribution to the broad patterns of our history; or (b) that are associated with the lives of persons significant in our past; or (c) that embody the distinctive characteristics of a type, period, or method of construction, or that represent the work of a master, or that possess high artistic values, or (d) that have yielded, or may be likely to yield, information important to history or prehistory. Isolated finds by definition do not meet these

criteria. California has adopted a very similar set of criteria for assessing resources of statewide importance.

Under federal law, resources determined not to be significant, that is, not eligible for National Register listing, are subject to recording and documentation only, and are afforded no further protection. However, occasionally certain resources, although they may not be assessed as “significant,” may nonetheless be of local or regional importance such that mitigation may be warranted regardless of their assessed significance. Staff evaluates the survey reports and site records for any known resources located within or adjacent to the project Area of Potential Effect (APE) to determine whether they meet the eligibility criteria.

The record and literature search and the survey of the proposed project APE were conducted to identify the presence of any cultural resource sites or materials. Where resources were identified, additional evaluation would be conducted to determine whether the resources are already listed on, or are potentially eligible for listing on, either the National Register of Historic Places (National Register) or the California Register of Historic Resources. The determination of eligibility is made in compliance with the applicable provisions of the National Historic Preservation Act.

Beginning in 1999, the California State Resources Agency adopted considerable revisions to the regulations implementing CEQA. These changes affected the language applicable to staff’s analysis of cultural resources. Previously, the bulk of the information on how to assess resource and impact significance and on the types of mitigation measures available was contained in Appendix K of the CEQA Guidelines. Much of the language of that appendix has now been incorporated into Title 14, California Code of Regulations, Sections 15126.4 and 15064.5.

The CEQA Guidelines now explicitly require the lead agency (in this case, the Energy Commission) to make a determination of whether a proposed project will affect “historical resources.” The guidelines provide a definition for historical resources and set forth a listing of criteria for making this determination. As used in CEQA, the term “historical resources” includes any resource, regardless of age, as long as it meets these criteria. If the criteria are met, the Energy Commission must evaluate whether the project will cause a “substantial adverse change in the significance of the historical resource,” which the regulation defines as a significant effect on the environment. The recent CEQA changes also indicate that the mitigation for impacts to historical resources that meet these criteria shall not be subject to the limitations provided in Public Resources Code, Section 21083.2.

A section in CEQA addressing “unique” archeological resources provides a definition of such resources (Public Resources Code, Section 21083.2). This section establishes limitations on analysis and prohibits imposition of mitigation measures for impacts to archeological resources that are not unique. However, the CEQA Guidelines state that the prohibition in this section does not apply when an archeological resource has already met the definition of a historical resource (Title 14, California Code of Regulations, Section 15064.5).

## **CHAPTER 15 CUMULATIVE IMPACTS**

The potential for cumulative impacts may be associated with the degree of prehistoric and historic sensitivity. The United Golden Gate site is proposed in an area close to one known historical resource, but is not sensitive for archeological resources. The proposed project is in an area that is currently highly developed. The city of South San Francisco and the city of San Bruno have approved numerous development projects. The earth disturbance caused by these projects will be considerable.

Proposed developments such as the UGGPP and its associated components in conjunction with other development projects would increase the amount of native soils disturbed by development and potential damage to cultural resources. The combined effects of such development can accelerate the potential for continued disturbance of cultural resource sites and the potential loss of valuable scientific information. The level of cumulative impact will grow as increasing development opens more undisturbed areas and eventually exposes highly sensitive cultural resource sites.

The incremental effect of this project may contribute to a significant cumulative impact on cultural resources in the San Francisco International Airport/San Bruno area. The UGGPP and any development projects in the vicinity may impact known cultural resources or encounter and disturb previously unknown cultural resources. The process of determining the presence of significant cultural resources will continue into the construction phase of this project. The applicant can mitigate impacts to undetermined sites to less than significant by following the recommendations for monitoring and mitigation set forth in the proposed conditions of certification.

## **CHAPTER 16 IMPACTS OF FACILITY CLOSURE**

The anticipated lifetime of the Phase I UGGPP project is expected to be no more than three years. El Paso Merchant Energy Company hopes to build a combined cycle power plant at this location to replace the Phase I plant before the required three-year decommissioning. Closure would be caused by either (1) a natural or manmade disaster or economic difficulty, or (2) planned orderly closure that will occur when the plant is decommissioned. If the site is converted to a combined cycle plant, El Paso will submit an Application for Certification (AFC) to the Energy Commission. The AFC for the combined cycle plant would identify and ensure compliance with all applicable LORS. If the Energy Commission approves the combined cycle plant, the certification decision for the replacement plant will include all appropriate and necessary conditions for incorporation of the Phase I project into the replacement plant and for its eventual closure.

According to the AFC, a temporary closure where there is no release of hazardous materials would necessitate the implementation of 24-hour security. A contingency plan for temporary cessation of operation would be implemented that would ensure compliance with all applicable LORS.

If a site were abandoned, impact to cultural resources would be unlikely because there would be no immediate soil disturbances. Over time, depending on the need to disturb the ground to accomplish project closure and facility removal, some disturbance of known and/or previously unknown cultural resources could result. At the time of planned closure, all then-applicable LORS will be identified and the closure plan required by the Energy Commission would address compliance with these LORS. Generally, if no additional ground disturbance occurs during closure activities and all conditions of certification have been met, no impacts to cultural resources would be expected. However, actual potential impacts are likely to depend upon the final location of project structures in relation to existing resources, and upon the procedures used for the removal of project structures. Since the spatial relationship between the closure and removal of project structures and sensitive resources cannot be determined at this time, no conclusion can be drawn at this time with respect to the impact of facility closure on cultural resources.

## **COMPLIANCE WITH APPLICABLE LORS**

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Staff's proposed conditions of certification will ensure compliance with applicable LORS.

## **MITIGATION**

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The proposed project will not cause the significance of any known cultural resources to be materially impaired. Since the original soils are inaccessible, there is a chance that an undiscovered cultural resource could be impaired by the project. If avoidance of an undiscovered cultural resource cannot be achieved, then other measures such as subsurface testing and data recovery must be implemented to minimize the adverse impact. Mitigation measures are developed to reduce the potential for adverse project impacts on cultural resources to a less than significant level.

## **CHAPTER 17 APPLICANT'S PROPOSED MITIGATION**

The U.S. Coast Guard Air Station is the only historical resource identified in close proximity of the project. The construction of the UGGPP project will not constitute a substantial adverse change in the significance of the station. However, the applicant indicated in the AFC that there is a remote possibility that asphalt or imported fill could obscure cultural resources.

Consequently, the applicant recommends the following:

- Worker education program
- Construction monitoring
- If resources are discovered, the resource would be evaluated and mitigation measures implemented if needed.

The construction crews would be informed concerning the importance of cultural resources and the legal protections afforded them.

The applicant also recommends consulting with Native American tribal representatives to develop an agreement(s) for qualified monitor(s). The monitor(s) will be considered part of the cultural resources team and will be present during pre-construction and construction phases of the project.

## **CHAPTER 18 STAFF'S PROPOSED MITIGATION MEASURES**

Commission staff concurs with the mitigation measures proposed by the applicant in the AFC and in supplemental filings except for the monitoring "between mileposts 13 and 19", which staff believes was inadvertently included in the application. Staff has adapted the applicant's proposed mitigation measures into a series of conditions of certification, sometimes rewording for clarification and adding time frames and other requirements. Adoption of staff's proposed conditions of certification is expected to reduce the potential for adverse project impacts on cultural resources to a less than significant level.

The proposed mitigation measures would apply to any potential for impacts to sensitive cultural resources in all areas affected by the project. Mitigation measures are derived from good professional practice and they are based on the U.S. Secretary of the Interior's guidelines. The mitigation measures set forth in the conditions have been applied to previous projects before the Commission and they have proven successful in protecting sensitive cultural resources from construction-related impacts while allowing the timely completion of many projects throughout California.

The cultural resources training program is intended to be a multi-faceted program that can be combined with other resource training. The training should have a lecture that will address the following topics: (1) applicable state and federal laws pertaining to cultural resources; (2) cultural materials that, upon discovery, will require notification of the construction supervisor, cultural resources monitor, and/or Cultural Resources Specialist (CRS); and (3) authority of the CRS, alternate CRS, or cultural resources monitor(s) to halt or redirect construction activities that have the potential to affect cultural resources. A form should be developed as part of the cultural resources awareness program for the workers to sign that certifies (1) their completion of the environmental awareness training program, (2) their understanding of their responsibilities under the program, and (3) their comprehension of potential legal penalties that could be brought against them individually should they violate applicable laws. The employees should be given a small durable Environmental Awareness Training Manual that includes the following:

1. applicable state and federal laws pertaining to cultural resources, procedures for reporting discovery of cultural resources;
2. work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project construction;
3. the name and telephone number of the CRS;
4. a statement that the alternate CRS, CRS, or cultural resources monitor(s) have the authority to halt or redirect construction activities;

5. some illustrations of the types of materials that might be found; and
6. a statement indicating that all vandalism of cultural resources should be immediately reported to the CRS, alternate CRS, the cultural resources monitor or a supervisor.

A video may be a component of the training program.

Native American monitoring will only be necessary if there is a discovery of a cultural resource that is of an aboriginal nature.

## CONCLUSIONS AND RECOMMENDATION

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### CHAPTER 19 CONCLUSIONS

Within one mile of the project site eight cultural resources have been identified and evaluated as not meeting the minimum requirements for eligibility for the National Register of Historic Places. Within 1500 feet of the project area, the U.S. Coast Guard Air Station was identified and found to be eligible for the National Register of Historic Places as a district. The addition of the power plant will be an additional minor change to the immediate surroundings of the U.S. Coast Guard Air Station. The change will not materially impair the eligibility of the U.S. Coast Guard Air Station district and will not constitute a substantial adverse change in the significance of this historical resource.

There is a possibility that project construction could encounter potentially significant archeological resources. If the following conditions of certification are properly implemented, the project will comply with applicable laws, ordinances, regulations, and standards, and no significant adverse direct, indirect, or cumulative impacts to cultural resources will occur.

### CHAPTER 20 RECOMMENDATION

Staff recommends that the Commission adopt the following proposed conditions of certification, which incorporate the mitigation measures discussed above.

## PROPOSED CONDITIONS OF CERTIFICATION

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**CUL-1** Prior to the start of ground disturbance (defined in the **GENERAL CONDITIONS** section), the project owner shall provide the California Energy Commission (Energy Commission) Compliance Project Manager (CPM) with the name and statement of qualifications of its Cultural Resource Specialist (CRS), and an alternate CRS, if an alternate is proposed, who would be responsible for implementation of all cultural resources Conditions of Certification.

Protocol: The statement of qualifications for the CRS and alternate shall include all information needed to demonstrate that the specialist meets the

minimum qualifications specified by the National Park Service, Heritage Preservation Services and shall be qualified by the Register of Professional Archaeologists (RPA). The minimum qualifications include the following:

1. a graduate degree in anthropology, archaeology, California history, cultural resources management, or a comparable field;
2. at least three years of archaeological resource mitigation and field experience in California; and
3. at least one year experience in each of the following areas:
  - a. leading archaeological resource field surveys;
  - b. leading site and artifact mapping, recording, and recovery operations;
  - c. marshaling and use of equipment necessary for cultural resources recovery and testing;
  - d. preparing recovered materials for analysis and identification;
  - e. determining the need for appropriate sampling and/or testing in the field and in the lab;
  - f. directing the analyses of mapped materials; and recovered artifacts;
  - g. completing the identification and inventory of recovered cultural resources material; and
  - h. preparing appropriate reports to be filed with the receiving curation repository, the SHPO, and the appropriate regional archaeological information center.

The statement of qualifications shall include:

- a. a list of specific projects that the specialist has previously worked on;
- b. the role and responsibilities of the specialist for each project listed; and
- c. the names and phone numbers of contacts familiar with the specialist's work on these referenced projects.

**Verification:** At least 45 days prior to the start of ground disturbance, the project owner shall submit the name and statement of qualifications of its CRS and alternate CRS to the CPM for review and approval.

At least ten days, prior to the start of any ground disturbance, the project owner shall confirm in writing to the CPM that the approved CRS will be available at the start date and is prepared to implement the cultural resource Conditions of Certification.

At least ten days prior to the termination or release of a CRS, the project owner shall obtain CPM approval of the replacement specialist by submitting to the CPM the name and a statement of qualifications of the proposed new CRS.



**CUL-2** Prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with maps and drawings showing the footprint of the power plant. Maps provided will include the USGS 7.5 minute topographic quadrangle map and a map at an appropriate scale (e.g., 1:2000 or 1" = 200') for plotting individual artifacts. In addition, the project owner shall provide a set of these maps to the CPM at the same time that they are provided to the specialist. If the footprint of the power plant or project components change, the project owner shall provide maps and drawings reflecting these changes, to the CRS and the CPM within five days. Maps shall show the location of all areas where surface disturbance may be associated with project-related access roads, and any other project components.

**Verification:** At least 40 days prior to the start of ground disturbance, the project owner shall provide the CRS and the CPM with the maps and drawings. Copies of maps or drawings reflecting changes to the footprint of the power plant and/or project components shall be submitted to the CRS and the CPM within five days of the changes.

**CUL-3** Prior to the start of ground disturbance, the CRS shall prepare, and the project owner shall submit to the CPM for review and approval, a Cultural Resources Monitoring and Mitigation Plan (CRMMP), identifying general and specific measures to minimize potential impacts in the event of an unanticipated discovery.

**Protocol:** The CRMMP shall include, but not be limited to, the following elements and measures.

- a. Identification of the person(s) expected to perform monitoring tasks; a description of each team member's qualifications and their responsibilities; and the reporting relationships between project construction management and the mitigation and monitoring team.
- b. A discussion of the inclusion of Native American observers or monitors, in the event of an unanticipated discovery, the procedures to be used to select them, and their role and responsibilities.
- c. A discussion of the location(s) where monitoring of project construction activities is deemed necessary by the CRS. The specialist will determine the size or extent of the areas where monitoring is to occur and will establish the percentage of the time that the monitor(s) will be present.
- d. A discussion of the requirement that all cultural resources encountered will be recorded and mapped (may include photos) and that, as a minimum, all significant or diagnostic resources will be collected for analysis and eventual curation into a retrievable storage collection in a public repository or museum. The public repository or museum must meet the standards and requirements for the curation of cultural

resources set forth at Title 36 of the Federal Code of Regulations, Part 79.

- e. A discussion of the availability and the designated specialist's access to equipment and supplies necessary for site mapping, photographing, and recovering any cultural resource materials encountered during construction.
- f. Identification of the public institution that has agreed to receive any data and cultural resources recovered during monitoring and mitigation work. Discussion of any requirements, specifications, or funding needed for curation of the materials to be delivered for curation and how they will be met. Also the name and phone number of the contact person at the institution shall be included.

**Verification:** At least 30 days prior to the start of ground disturbance, the project owner shall provide the CRMMP, prepared by the CRS, to the CPM for review and approval.

**CUL-4** Prior to the start of ground disturbance, the CRS shall prepare an employee training plan. The project owner shall submit the cultural resources training plan to the CPM for review and approval. If use of a video is anticipated as a component of the training program, a copy of the script of the video shall be submitted to the CPM for review and approval.

**Protocol:** The training plan and all program components will be submitted to the CPM. The drafts of training plan and the program components will be reviewed and approved. The training program shall discuss the potential to encounter cultural resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall include a lecture and/or a video that will address the following topics: (1) applicable state and federal laws pertaining to cultural resources; (2) cultural materials that, upon discovery, will require notification of the construction supervisor, cultural resources monitor, and/or CRS; and (3) authority of the CRS, alternate CRS, or cultural resources monitor(s) to halt or redirect construction activities that have the potential to affect cultural resources. The training program shall also include the set of resource reporting procedures and work curtailment procedures that workers are to follow if previously unknown cultural resources are encountered during project activities. The training program shall include the statement that the CRS, alternate CRS or cultural resources monitor has the authority to halt construction in the event of an unanticipated discovery. The employees shall be given a small durable Environmental Awareness Training Manual that includes all of the legal and procedural information necessary to fulfil the Conditions of Certification and contact names and numbers of the CRS and alternate CRS.

A form shall be developed as part of the cultural resources awareness program for the workers to sign that certifies (1) their completion of the environmental awareness training program, (2) their understanding of their responsibilities under the program, and (3) their comprehension of potential legal penalties that could be sought against them individually should they violate applicable laws.

The training program shall be presented by the CRS or qualified member of the cultural resources team(s) approved by the CPM and may be combined with other training programs prepared for biological resources, paleontological resources, hazardous materials, or any other areas of interest or concern.

**Verification:** At least 30 days prior to the start of ground disturbance; the project owner shall submit to the CPM for review and approval, the proposed employee training plan and its components (e.g. the script of the proposed video if one is proposed). The project owner shall provide the name and resume of the individual(s) performing the training.

**CUL-5** Prior to the start of ground disturbance, and throughout the project construction period as needed for all new employees, the project owner shall ensure that the designated cultural resource trainer(s) provide(s) the CPM-approved cultural resources training to all project managers, construction supervisors, and workers. The project owner shall ensure that the designated trainer provides the workers with the CPM-approved set of procedures for reporting any sensitive resources that may be discovered during ground disturbance and the work curtailment procedures that the workers are to follow if previously unknown cultural resources are encountered during construction.

Training at the project site may be discontinued after all foundations at the site are completed and the CRS has inspected the site and determined that no cultural resources will be impacted. Training shall continue for project personnel working in the vicinity of other project components that will disturb native soils.

**Verification:** In each Monthly Compliance Report, after the start of construction, the project owner shall provide the CPM with documentation that the designated cultural resource trainer(s) has/have provided to all project managers, construction supervisors, and workers hired in the month to which the report applies, the CPM-approved cultural resources training and the set of resource reporting and work curtailment procedures.

After installation of all foundations at the project site, if the project owner wishes to discontinue training at the project site, the project owner shall provide a letter to the CPM indicating that the CRS has inspected the project site and has not observed any cultural resources that may be impacted by the project.

**CUL-6** The CRS, alternate or the monitor(s) shall have the authority to halt or redirect construction if previously unknown cultural resource sites or materials are encountered or if known resources may be impacted in a previously unanticipated manner.

If such resources are found, the halting or redirection of construction shall remain in effect until:

- a. The specialist has notified the CPM and the project owner of the find and the work stoppage;
- b. The specialist, the project owner, and the CPM have conferred and determined what, if any, data recovery or other mitigation is needed; and
- c. Any necessary data recovery and mitigation has been completed.

The specialist, the project owner, and the CPM shall confer within five working days of the notification of the CPM to determine what, if any, determination of significance, data recovery or other mitigation is needed.

If data recovery or other mitigation measures are required, the specialist and team members shall monitor construction activities and implement data recovery and mitigation measures, as needed.

If unearthed cultural resources appear to be Native American in origin, a monitor who traces ancestry to the affected area shall be added to the cultural resource team. The Native American monitor shall be present during any monitoring of cultural resources that appear to be Native American in origin.

All required data recovery and mitigation shall be completed expeditiously unless all parties agree to additional time.

**Verification:** At least ten days prior to the start of ground disturbance, the project owner shall provide the CPM with a letter confirming that the CRS, alternate and monitor(s) have the authority to halt construction activities in the vicinity of a cultural resource find.

For any cultural resource encountered, the project owner shall notify the CPM within 24 hours after the find.

Within seven days of obtaining a Native American monitor, the project owner shall notify the CPM by letter that the monitor has been obtained.

**CUL-7** Prior to the start of ground disturbance, and each week throughout project construction, the project owner shall provide the CRS with a current schedule of anticipated project activity in the following month and a map indicating the area(s) where the construction activities will occur. The CRS shall consult daily with the project superintendent or construction field manager to confirm the area(s) to be worked on the next day(s).

**Verification:** Ten days prior to the start of ground disturbance, and in each Monthly Compliance Report thereafter, the project owner shall provide the CPM with a copy of each weekly schedule of the construction activities. The project owner shall notify the CPM when all ground disturbing activities, including landscaping, are completed.

**CUL-8** Throughout monitoring and mitigation phases of the project, the CRS, alternate and monitor(s) shall keep a daily log of any resource finds and the progress or status of the resource monitoring, mitigation, preparation, identification, and analytical work being conducted for the project. The daily logs shall indicate where and when monitoring has taken place, where monitoring has been deemed unnecessary, and where cultural resources were found.

The CRS shall prepare a weekly summary of the daily logs on the progress or status of cultural resource-related activities.

The CRS and monitor(s) may informally discuss the cultural resource monitoring and mitigation activities with Energy Commission technical staff.

**Verification:** Throughout the project construction period, the project owner shall ensure that the daily log(s) and the weekly summary reports prepared by the CRS and monitor(s) are available for periodic audit by the CPM.

**CUL-9** The CRS, alternate CRS, or cultural resources monitor(s) shall be present at times the specialist deems appropriate to monitor ground disturbance.

**Protocol:** If the CRS determines that monitoring is necessary in certain portions of the project area or project components, the designated specialist shall notify the project owner and the CPM of the planned monitoring. The CRS shall use milepost markers and boundary stakes placed by the project owner to identify areas where monitoring is being activated and deemed necessary.

**Verification:** Throughout the project construction period the project owner shall include in the Monthly Compliance Reports to the CPM copies of the weekly summary reports prepared by the CRS regarding cultural resource monitoring.

**CUL-10** The project owner shall ensure that the CRS performs the recovery, preparation for analysis, analysis, preparation for curation, and delivery for curation of all cultural resource materials encountered and collected during the monitoring, data recovery, mapping, and mitigation activities related to the project.

**Verification:** The project owner shall maintain in its compliance files, copies of signed contracts or agreements with the museum(s), university (ies), or other appropriate research specialists. The project owner shall maintain these files for

the life of the project and the files shall be kept available for periodic audit by the CPM. Information as to the specific location of sensitive cultural resource site shall be kept confidential and accessible only to qualified cultural resource specialists.

**CUL-11** Following completion of data recovery and site mitigation work, the project owner shall ensure that the CRS prepares a proposed scope of work for the Cultural Resources Report (CRR). The project owner shall submit the proposed scope of work to the CPM for review and approval.

Protocol: The proposed scope of work shall include (but not be limited to):

- a. discussion of any analysis to be conducted on recovered cultural resource materials;
- b. discussion of possible results and findings;
- c. proposed research questions which may be answered or raised by analysis of the data recovered from the project; and
- d. an estimate of the time needed to complete the analysis of recovered cultural resource materials and to prepare the CRR.

**Verification:** The project owner shall ensure that the CRS prepares the proposed scope of work within 90 days following completion of the data recovery and site mitigation work. Within seven days after completion of the proposed scope of work, the project owner shall submit it to the CPM for review and approval.

**CUL-12** The project owner shall ensure that the CRS prepares a CRR. The project owner shall submit the report to the CPM for review and approval.

Protocol: The CRR shall include (but not be limited to) the following:

- a. For all projects:
  1. description of pre-project literature search, surveys, and any testing activities;
  2. maps showing areas surveyed or tested;
  3. description of any monitoring activities;
  4. maps, including maps using a 7.5 minute USGS topographic base, of any areas monitored; and
  5. conclusions and recommendations.
- b. For projects in which cultural resources were encountered, include the items specified under “a” and also provide:
  1. site and isolate records and maps;
  2. description of testing for, and determinations of, significance and potential eligibility; and

3. a discussion of the research questions answered or raised by the data from the project.
- c. For projects regarding which cultural resources were recovered, include the items specified under “a” and “b” and also provide:
1. a description of the methods employed in the field and laboratory; a description (including drawings and/or photos) of recovered cultural materials;
  2. results and findings of any special analyses conducted on recovered cultural resource materials;
  3. an inventory list of recovered cultural resource materials; an interpretation of the site(s) with regard to the research design; and
  4. the name and location of the public repository receiving the recovered cultural resources for curation.

**Verification:** The project owner shall ensure that the CRS completes the CRR within 90 days following completion of the analysis of the recovered cultural materials. Within seven days after completion of the report, the project owner shall submit the CRR to the CPM for review and approval.

**CUL-13** The project owner shall submit an original, an original-quality copy, and a computer disc copy (or other format to meet the repository’s requirements), of the CPM-approved CRR to the public repository to receive the recovered data and materials for curation, with copies to the State Historic Preservation Officer (SHPO), the appropriate regional California Historical Resources Information System information center(s). If the report is submitted to any of these entities on a computer disc, the disc files must meet SHPO requirements for format and content.

**Protocol:** The copies of the CRR to be sent to the entities specified above shall include the following (based on the applicable scenario [a, b, or c] set forth in condition Cul-12):

- a. originals or original-quality copies of all text;
- b. originals of any topographic maps showing site and resource locations;
- c. originals or original-quality copies of drawings of significant or diagnostic cultural resource materials found during pre-construction surveys or during project monitoring and mitigation and subjected to post-recovery analysis and evaluation.
- d. photographs of any cultural resource site(s) and the various cultural resource materials recovered during project monitoring and mitigation and subjected to post-recovery analysis and evaluation. The project owner shall provide the curation repository with a set of negatives for all of the photographs.

**Verification:** Within 30 days after receiving approval of the CRR, the project owner shall provide to the CPM documentation that the report has been sent to the public repository receiving the recovered data and materials for curation, the SHPO and the regional California Historical Resources Information System information center(s).

For the life of the project the project owner shall maintain in its compliance files copies of all documentation related to the filing of the CPM-approved CRR with the public repository receiving the recovered data and materials for curation.

**CUL-14** Following the filing of the CPM-approved CRR with the appropriate entities, specified in condition CUL-13, the project owner shall ensure that all cultural resource materials, maps, and data collected during data recovery and mitigation for the project are delivered to a public repository that meets the US Secretary of Interior requirements for the curation of cultural resources. The project owner shall pay any fees for curation required by the repository.

**Verification:** The project owner shall ensure that all recovered cultural resource materials are delivered for curation within 30 days after providing the CPM-approved CRR to the entities specified in CUL-13.

For the life of the project the project owner shall maintain in its compliance files, copies of signed contracts or agreements with the public repository to which the project owner has delivered for curation all cultural resource materials collected during data recovery and mitigation for the project.



## REFERENCES

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- El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.
- El Paso Merchant Energy (El Paso). 2000b. Supplementary AFC Material in Response to Data Adequacy Worksheets. Filed with the California Energy Commission, October 17, 2000.
- El Paso Merchant Energy (El Paso). 2000c. Data Request Responses Part I. Filed with the California Energy Commission, December 6, 2000.
- El Paso Merchant Energy (El Paso). 2000d. Data Request Responses Part II. Filed with the California Energy Commission, December 15, 2000.



# SOCIOECONOMICS

Testimony of James Adams

## INTRODUCTION

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A staff socioeconomic impact analysis evaluates the project-induced changes on community services and/or infrastructure including schools, medical and protective services and related community issues such as environmental justice. This analysis discusses the potential direct and cumulative impacts of the proposed United Golden Gate Power Plant, Phase I (UGGPP) project on local communities, community resources, and public services.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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### CHAPTER 21 FEDERAL

Executive Order 12898, "Federal Actions to address Environmental Justice in Minority Populations and Low-Income Populations," focuses federal attention on the environment and human health conditions of minority communities and calls on agencies to achieve environmental justice as part of this mission. The order requires the U.S. Environmental Protection Agency, and all other federal agencies, and state agencies receiving federal funds to develop strategies to address this issue. The agencies are required to identify and address any disproportionately high and adverse human health or environmental effects of their programs, policies, and activities on minority and/or low-income populations.

### CHAPTER 22 STATE

#### ***CALIFORNIA GOVERNMENT CODE, SECTIONS 65996-65997***

As amended by SB 50 (Stats. 1998, ch. 407, sec. 23), these sections state that public agencies may not impose fees, charges, or other financial requirements to offset the cost for school facilities.

#### ***14 CALIFORNIA CODE OF REGULATIONS, SECTION 15131***

- (a) Economic or social effects of a project shall not be treated as significant effects on the environment.
- (b) Economic or social factors of a project may be used to determine the significance of physical changes caused by the project.
- (c) Economic, social and particularly housing factors shall be considered by public agencies together with technological and environmental factors in deciding whether changes in a project are feasible to reduce and or avoid the significant effects on the environment.

## CHAPTER 23 LOCAL

### ***SAN FRANCISCO INTERNATIONAL AIRPORT MASTER PLAN***

The Airport Master Plan (Plan) provides the basis for implementing changes in the use of airport-owned landside facilities to improve the efficiency and cost-effectiveness of airport operations (San Francisco 1989). The Plan acknowledges the existence of the United Cogeneration, Inc. (UCI) unit as a backup for the United Airlines Maintenance Center.

## SETTING

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## CHAPTER 24 PROJECT LOCATION

The proposed project is located within the boundary of the San Francisco International Airport and will be situated adjacent to the UCI in close proximity to the United Airlines Maintenance Facility along North Access Road in San Mateo County. For a full description of the location, please refer to the **Project Description** section of this document and the facility location section of El Paso's Application for Certification (El Paso 2000a, AFC, page 3.2-1). The study area (affected area), as defined in the socioeconomics section of the AFC, includes the greater San Francisco Bay Area and San Mateo County (El Paso 2000a, AFC pages 5.10-1 and 10-2). The project site is located on the western shore of San Francisco Bay, about nine miles south-southeast of the city of San Francisco and approximately one mile east of the city of San Bruno.

## CHAPTER 25 DEMOGRAPHICS

Within the study area, the communities of South San Francisco, San Bruno and Millbrae are considered to be potentially affected by the proposed project. Recent and projected population figures for the census tracts within a six mile radius of the project site are displayed in **Socioeconomics Figures 1 and 2**. **Figure 1** shows the percentage of people of color by census tract based on 1990 data from the U.S. Census Bureau. About 62 percent of the tracts have a white population greater than 50 percent, while the remaining 38 percent of the tracts have a minority population greater than 50 percent.

The demographic profile displayed in **Socioeconomics Figure 2** provides the estimated percentage of people of color by census tract using projected demographic data for the year 2000, which was generated by the marketing firm of Claritas, Inc. (Claritas 2000). The estimate for 2000 indicates that 58 percent of the tracts have a minority population greater than 50 percent. Because the Claritas data is an estimate based on the 1990 Census, staff considers the 1990 data to be the most reliable. However, a clear trend toward increased minority population is discernible. **Socioeconomics Table 1** shows the demographic profile for the communities adjacent to the project site.

## **SOCIOECONOMICS Table 1**

Demographic Profile For The Communities of South San Francisco, San Bruno, and Millbrae

<b>Race/Ethnicity</b>	<b>South San Francisco</b>	<b>San Bruno</b>	<b>Millbrae</b>
<b>White</b>	<b>45%</b>	<b>59%</b>	<b>79%</b>
<b>Black</b>	<b>2.5%</b>	<b>Less than 1%</b>	<b>1 %</b>
<b>American Indian</b>	<b>Less than 1%</b>	<b>Less than 1%</b>	<b>0 %</b>
<b>Asian</b>	<b>25%</b>	<b>18%</b>	<b>17 %</b>
<b>Other</b>	<b>26.5%</b>	<b>21%</b>	<b>3 %</b>
<b>Sources: 1990 US Census Data; Millbrae 1998a.</b>			

The percentage of persons living in poverty in San Mateo County in 1989 was approximately 6 percent (El Paso 2000b, Socioeconomics Appendix A, page iii; U.S. 1990 Census; SAMCEDA 1999). This contrasts with 8.5 percent for the Bay Area and 12.5 percent for California as a whole.

## **EMPLOYMENT**

Within the San Francisco Bay Area, the majority of employment is generated in the service, retail trade manufacturing industries (El Paso 2000a, AFC Table 5.10-6, page 5.10-18). These three industries account for approximately 2.5 million jobs or almost 70 percent of all employment. Construction employment represents approximately 5 percent of total employment within the study area, and is concentrated primarily around residential and commercial development. The nine county Bay Area is expected to add nearly a million new jobs over the next 20 years (ABAG 1999).

The largest industries for San Mateo County are services, retail trade, and transportation, communication, and utilities. These industries are estimated to employ about 245,000 jobs or just under 65 percent of all employment in 2000. Construction employment is estimated to provide more than 19,000 jobs or 5 percent of the total jobs in 2000 which is similarly focused on residential and commercial development. It is estimated that 71,000 new jobs will be created in the County by 2020.

The 2000 unemployment rate for the Bay Area is estimated to be less than 3 percent (California Employment Development Department 1999). Historically, the unemployment rate has ranged between 4 percent in 1990 and 6 percent in 1995, with a steady decrease in the unemployment rate since 1995 (California Employment Development Department 1999). In 1999, the estimated unemployment rate for San Mateo County was about 2.8 percent.

## **CHAPTER 26 FINANCIAL**

The San Francisco Bay Area has a robust and innovative economy that generated \$330 billion in gross regional product in 1999 (El Paso 2000b, Socioeconomics

Analysis, p.1). The Bay Area is a leader in knowledge-based industries such as information technology, biosciences and telecommunications. It also serves as a port of entry for trade from nations throughout the Pacific Rim. This economic activity provides a substantial tax base for area governments. For the fiscal year 1996-1997, budgeted expenditures for San Francisco County government totaled \$4.7 billion.

San Mateo County shares in this economic development activity particularly in the service sector and transportation. In particular, the County's major employers, such as San Francisco International Airport and computer software companies have remained relatively strong despite the recession in the early 1990s (ABAG 1999). The economy expanded by over 8% in 1996 and 1997 before leveling off at 4.3% in 1998. Approximately \$30 billion worth of goods were generated in 1998 (SAMCEDA 1999). This has also allowed for significant revenues for local governments. San Mateo County revenues for 1999-2000 were \$658,492,214 and are projected to be \$715,212,271 in fiscal year 2000-2001 (WZI/Brady 2000a).

The estimated median family income in 2000 for the Bay Area as a whole is approximately \$36,000, which is considerably lower than \$41,000 estimated median income for San Mateo County. The County figure is 55% higher than the U. S. average (SAMCEDA 1999).

## **HOUSING**

As of January 2000, there were approximately 263,000 houses in San Mateo County. Housing stock for the Bay Area as a whole on January 1, 2000 was estimated at 2.5 million (Department of Finance 2000). Vacancy rates within the Bay Area are generally less than 5 percent (SAMCEDA 1999). Per the federal housing standard, an area with a vacancy rate below 5 percent is considered to be in short supply.

In addition to the above, there are thousands of motel/hotels in the Bay Area in general and San Mateo County in particular. Occupancy rates in the Bay Area range from 65 to 70 percent throughout the year. San Mateo County has approximately 95 hotels with 11,627 guestrooms as of April 1999. Occupancy rates are typically above 75 percent. In addition, there are numerous motels and other temporary lodging options in the County (SAMCEDA 2000).

## **SCHOOLS**

Data for schools within San Mateo County were not compiled for this analysis because a sufficient labor pool exists within the study area and it is anticipated that construction and operations workers will commute to the project site rather than relocate.

## **UTILITIES, EMERGENCY AND OTHER SERVICES**

Electricity and natural gas in the local project area is distributed by PG&E. Potable water is provided by Hetch Hetchy Water and Power and local telephone service is provided by Pacific Bell. Fire protection and emergency services for the project site are provided by the City of San Francisco Fire Department, Airport Division.

Similarly, law enforcement service is provided by the City of San Francisco Police Department, Airport Bureau (El Paso 2000b, Socioeconomics Analysis, page 6).

The closest hospital to the project site is Mills-Peninsula in Burlingame, though there is a small medical clinic at San Francisco International Airport and another small facility at the United Airlines Maintenance Operation Center. For serious trauma and medical service, patients can be sent to San Francisco General Hospital (Gitmed 2000).

## **IMPACTS**

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### **CHAPTER 27 PROJECT-SPECIFIC IMPACTS**

Staff reviewed the United Golden Gate Power Plant, Phase I AFC, Volume 1, dated September 2000, Socioeconomic Section 5.10 (EL Paso 2000a), as well as responses to project-specific data requests and a supplemental filing (El Paso 2000b). Additionally, staff requested and reviewed a research analyses from the marketing firm Claritas, Inc. This analysis was specific to the projected demographic profile of the area within a six-mile radius of the power plant site. The applicant used appropriate public databases in the analysis in the AFC. Staff's analysis is based on verification of the information within the AFC and independent research.

### **EMPLOYMENT**

Much of the analysis in the socioeconomic section of the AFC describes the impacts of the larger United Golden Gate project that will be addressed in a subsequent siting case review. However, staff has been able to get more specific information for UGGPP through subsequent data requests and correspondence. The applicant expects that the projected 30 construction workers would commute daily to the project site. Most construction workers would not be expected to relocate during construction. Construction of the facility would take approximately 4 months and the personnel required for construction would be greatest during the first three months (WZI/Brady 2000b). One person would be employed during operations. The types and trades of workers needed are available from the local workforce and are typical of other power plant construction projects.

Based upon the data discussed above, staff concludes that construction and operation of the project would not have a significant impact on employment either regionally or locally. In general, full-time jobs have a multiplier effect on the local and regional economy by supporting additionally indirect job growth. It is estimated that two to three indirect jobs would be supported by each construction job, such as those that would be generated by the proposed project. A net benefit is therefore likely to occur.

### **CHAPTER 28 HOUSING**

The demand for housing within the study area is not expected to increase appreciably as a result of the proposed project because of the relatively small size

and temporary nature of the work force that is expected to commute to the project site. Staff concludes that construction of the proposed project would not significantly increase the demand for housing. The one employee needed for operation of the project would probably commute from within the study area.

## **CHAPTER 29 SCHOOLS**

As referenced above, the majority of the project's construction personnel would commute rather than relocate for the five month construction period. As such, the project is not anticipated to impact the school districts of San Mateo or adjacent counties.

## ***UTILITIES, EMERGENCY AND OTHER SERVICES***

Construction and operation of the project is not expected to create a demand for utilities that cannot be met by local utility providers. There are adequate process water, natural gas and electrical supplies. Process water requirements can be met from the United Airlines metals removal plant (MRP). Potable water would be supplied through the existing SFIA water supply. Sanitary waste will be disposed of in to the existing SFIA sanitary waste system. Water supply and wastewater disposal are discussed in more detail in the **SOIL AND WATER RESOURCES** section of this Staff Assessment.

Project construction and operation may result in increased calls to the City of San Francisco Fire and Police Department. There are adequate medical and emergency response services within a 12-mile radius of the project site. Staff believes that the construction and operation of the UGGPP is not expected to create a significant impact on emergency services.

## ***FINANCIAL***

The applicant estimates that the total capital cost of the proposed project is \$50 million. The construction payroll for the project is estimated to be approximately \$750,000 to \$1 million. The estimated cost for materials and supplies purchased locally is approximately \$2-\$4million (WZI/Brady 2000a).

Project construction and operation would have a small beneficial impact on both the study area's economic base and fiscal resources through employment of both local and regional workers, as well as through the purchases of local and regional construction materials.

## **CHAPTER 30 ENVIRONMENTAL JUSTICE**

For all siting cases, staff follows the U.S. Environmental Protection Agency's guidance in conducting a two-step environmental justice analysis. The analysis assesses:

- Whether the potentially affected community has a population that is more than 50 percent minority and/or low-income, or has a minority or low-income population percentage that is meaningfully greater than the percent of minority or low income in the general population, or other appropriate unit of geographic analysis; and



- Whether the environmental impacts are likely to fall disproportionately on the minority and/or low-income population.

If the analysis indicates the presence of a substantial minority or low-income population, local community groups are contacted to provide the Commission with a fuller understanding of the community and the potential environmental justice issues. Staff has determined the affected area for this environmental justice analysis to be the area within a six-mile radius of the proposed project site. The affected area is defined as the area potentially impacted by the proposed project (primarily for air quality and public health).

As noted earlier, a comparison between **Socioeconomics Figures 1 and 2** shows that the number of census tracts within six miles of the proposed UGGPP with a population of minority persons greater than 50 percent has increased substantially since 1990. In 1990, 62 percent of the tracts had a majority of white persons. That number has probably decreased to 42 percent. In other words, an estimated 58 percent of the tracts, using the Claritas data, have a greater than 50 percent population of minority persons. Moreover, a number of the minority dominated census tracts are much closer or adjacent to the proposed UGGPP site.

Because the federal guidance does not give a percentage of population threshold to determine when a low-income population becomes recognized for an environmental justice analysis, staff used the same greater than 50 percent threshold that is used for minority populations.

As mentioned above, the number of persons living in poverty in San Mateo was approximately 6 percent and since updated data is not provided by firms such as Claritas, staff has used the number of persons eligible for Medi-Cal benefits as another indicator of poverty. In 1997, San Mateo County's rate of Medi-Cal eligibles was 7 percent which was half the statewide average, though somewhat higher than the County's 5.5 percent rate in 1990 (SAMCEDA 1999). Using a conservative estimate, staff concludes that the number of persons living in poverty in the County is less than 10 percent. The applicant has provided data from the 1990 census that suggest that percentage may be lower for persons living within a four-mile area of the project site (El Paso 2000a, Socioeconomics Appendix A, page iii).

Even though low-income and minority populations exist in the immediate area, staff has not identified any significant unmitigated adverse environmental effects associated with the proposed project or cumulative impacts; therefore, no significant adverse impacts to minority or low-income populations are expected to occur. The **Air Quality, Public Health and Hazardous Materials Handling** sections of the AFC indicate that potential risks to the public can be mitigated to a less-than-significant level through minimizing the use of hazardous materials, engineering controls, operational controls, administrative controls, and emergency response planning.

## **PROPERTY VALUES**

To date, no concerns have been expressed regarding the potential for local residents and businesses to be unable to get full market value for their properties once the proposed plant expansion is built and operating. Historically, however, property value concerns have been expressed on projects similar to the proposed project. To address these concerns, staff has, in previous project analyses, assessed the potential property value impacts associated with natural gas-fired power plants. In general, staff has determined that there is no information or study that demonstrates an adverse or negative impact on property values directly attributable to a natural gas-fired power plant. Based upon this finding, and in conjunction with the ABAG projections for continued housing development and increases in property values, staff has concluded that it is unlikely that the proposed project will adversely impact property values within the immediate power plant vicinity.

## **CHAPTER 31 CUMULATIVE IMPACT**

Given the relatively small scale of the UGGPP in terms of workers, materials, equipment, and length of construction, staff does not believe there will be any significant cumulative impacts associated with other large or small-scale construction projects in the study area. The City of South San Francisco does have a number of Office/R&D projects in planning or under construction but these are not expected to interfere with the construction and operation of UGGPP. Staff is unaware of any significant construction projects within the City of San Bruno, and the extension of BART through Millbrae to the San Francisco Airport should not interfere with the proposed project. Similarly, there were no cumulative impacts identified from operation of the proposed project, as it will require one permanent project person who will probably already be living within San Mateo County. Consequently, no significant cumulative impacts on the socioeconomics of the study area are anticipated to occur due to operation.

## **FACILITY CLOSURE**

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### **CHAPTER 32 UNEXPECTED PERMANENT CLOSURE**

Should the proposed plant be permanently closed, the beneficial socioeconomic impacts such as worker payroll, project expenditures, local economic stimulus, and property tax revenues would no longer occur. The UGGPP can only be certified to operate for three years. El Paso plans on replacing the Phase I facility with a combined cycle facility that will be subject to a separate review and certification by the Energy Commission.

### **CHAPTER 33 UNEXPECTED TEMPORARY CLOSURE**

Should the plant be temporarily shutdown or closed, there would not be any significant socioeconomic impacts. The applicant would conduct a review to determine if there had been any environmental damage or release of hazardous materials. If not, the plant could be mothballed. Before the plant begins commercial operation, the applicant will develop a contingency plan to deal with

premature or unexpected closures. This would include communication with the Energy Commission, and the San Francisco Airport Commission, as well as other local agencies regarding schedule of facility closure and compliance with LORS.

## **CHAPTER 34 PLANNED CLOSURE**

The United Golden Gate combined cycle plant is anticipated to replace this project within three years. El Paso plans to replace Phase I of UGGPP with a combined cycle power plant within three years. El Paso will submit a separate Application for Certification for the replacement project. If that project is approved by the Energy Commission that certification decision will include all necessary and appropriate conditions, of certification for the replacement of the Phase I project with the combined-cycle facility and for the eventual closure of the replacement facility. If the replacement project is not approved, El Paso will be required to submit a closure plan, as discussed in more detail in the **GENERAL CONDITIONS** section of this Staff Assessment.

## **MITIGATION**

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Energy Commission staff has identified economic and fiscal benefits to the overall study area and local project site vicinity such as employment, project expenditures, sales, and property tax revenues. To ensure that the local area benefits from the project, staff is proposing a condition of certification that will lead to local employment and project-related expenditures.

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CHAPTER 35 CONCLUSIONS**

Staff believes that the United Golden Gate Power Plant, Phase I Project would not cause a significant adverse direct or cumulative impact on housing, employment, schools, public services or utilities. The project would have a minor benefit to the Bay Area and San Mateo County and the local project vicinity in terms of an increase in local jobs and commercial activity during construction and operation of the facility. The construction payroll and project expenditures would also have a positive effect on the local and regional economy. Overall, staff believes that the UGGPP will have a positive socioeconomic impact on the local and regional area.

Although there are census tracts in the immediate area in which more than 50 percent of the population is comprised of minorities, staff has not identified any significant unmitigated adverse environmental effects associated with the proposed project or cumulative impacts. Therefore, there is no potential for significant impacts to minority populations. Similarly, there is no potential for significant impacts to low-income populations.

The project, as proposed, would be consistent with all applicable socioeconomic LORS. The proposed condition of certification ensure that anticipated local benefits occur to the extent feasible.

## **RECOMMENDATIONS**

If the Energy Commission certifies the proposed project, staff recommends that it adopt the following condition of certification.

### **PROPOSED CONDITION OF CERTIFICATION**

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**SOCIO-1:** The project owner and its contractors and subcontractors shall recruit employees and procure materials and supplies from within the San Francisco Bay Area, and encourage such recruitment and purchases within San Mateo and San Francisco counties first unless:

- to do so will violate federal and/or state statutes;
- the materials and/or supplies are not available; or
- qualified employees for specific jobs or positions are not available; or
- there is a reasonable basis to hire someone for a specific position for outside the local area.

**Verification:** At least 30 days prior to the start of earth moving activities, the project owner shall submit to the Energy Commission Compliance Project Manager (CPM) copies of contractor, subcontractor, and vendor solicitations and guidelines stating hiring and procurement requirements and procedures. In addition, the project owner shall notify the CPM in each Monthly Compliance Report of the reasons for any planned procurement of materials or hiring outside the local regional area that will occur during the next two months.

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# BIOLOGICAL RESOURCES

Testimony of Bradley S. Norling and Linda Spiegel

## INTRODUCTION

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This section provides the Energy Commission staff's analysis of potential impacts to biological resources from the El Paso Merchant Energy Company's (El Paso) proposal for the construction and operation of Phase I of the United Golden Gate Power Project (UGGPP). This analysis is primarily directed toward impacts to state and federally listed species, species of special concern, wetlands, and other areas of critical biological concern. This document presents information regarding the affected biotic community, the potential environmental impacts associated with the construction and operation of the proposed project, and where necessary, specifies mitigation planning and compensation measures to reduce potential impacts to non-significant levels. This document also determines compliance with applicable laws, ordinances, regulations and standards (LORS), and specifies conditions of certification.

This analysis is based, in part, on information provided as of September 29, 2000 from El Paso's Application For Certification (AFC) (El Paso 2000a) [staff's Issue Identification Report], El Paso's supplemental AFC material submitted October 17, 2000 (El Paso 2000b), and staff's November 13, 2000 site visit.

## LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)

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### FEDERAL

#### ***ENDANGERED SPECIES ACT OF 1973***

Title 16, United States Code, section 1531 *et seq.*, and Title 50, Code of Federal Regulations, part 17.1 *et seq.*, designate and provide for protection of threatened and endangered plant and animal species, and their critical habitat.

#### ***MIGRATORY BIRD TREATY ACT***

Title 16, United States Code, sections 703 through 711, prohibits the take of migratory birds, including nests with viable eggs.

#### ***CLEAN WATER ACT OF 1977***

Title 33, United States Code, sections 1251–1376, and Code of Federal Regulations, part 30, section 330.5(a)(26). The Act requires the permitting and monitoring of all discharges to surface water bodies. Section 404 permits from the U.S. Army Corps of Engineers for discharges from dredged or fill materials into waters of the U.S., including wetlands, and Section 401 permits from the state water resources control board for the discharge of pollutants are issued under the authority of this Act.

## STATE

### ***CALIFORNIA PUBLIC RESOURCES CODE***

California Code of Regulations, section 25523(a) through 2098, protects California's rare, threatened, and endangered species.

### ***CALIFORNIA ENDANGERED SPECIES ACT OF 1984***

Fish and Game Code, sections 2050 through 2098, protects California's rare, threatened, and endangered species.

### ***CALIFORNIA CODE OF REGULATIONS***

Title 14, California Code of Regulations, sections 670.2 and 670.5, lists animals of California designated as threatened or endangered.

### ***FULLY PROTECTED SPECIES***

Fish and Game Code, sections 3511, 4700, 5050, and 5515, prohibits take of plants and animals that are fully protected in California.

### ***SIGNIFICANT NATURAL AREAS***

Fish and Game Code, section 1930, designates certain areas such as refuges, natural sloughs, riparian areas and vernal pools as significant wildlife habitat.

### ***NATIVE PLANT PROTECTION ACT OF 1977***

Fish and Game Code, section 1900 et seq., designates state rare, threatened, and endangered plants.

## SETTING

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The proposed UGGPP is located on the western shore of the San Francisco Bay, approximately 9.3 miles south-southeast of the city of San Francisco, California. The site is within the boundaries of the San Francisco International Airport (SFIA), which is bounded by the Bay to the east and the communities of South San Francisco, San Bruno, and Millbrae to the north, west, and south, respectively.

The proposed project will be built in a parking lot for United Airlines located immediately north of the United Airlines Maintenance Operations Center east of the UCI powerplant. Topography on the site is flat with elevations ranging between 10-15 feet above sea level. The proposed project site is bordered by industrial land uses to the immediate west, east, and south. The San Francisco Bay is located approximately 1,000 feet to the northeast. There are no surface waters or wetlands located on the site. A small inlet of tidal marsh and mudflats lies several hundred feet to the north of the site. This area is known as the San Bruno Slough and is dominated primarily by cordgrass, pickleweed, and saltgrass vegetation.

Historically, the Bay Area contained a variety of natural lands and habitats that supported numerous plant and animal species. Since the mid 1800s, however,



most of the large continuous areas of tidal marshes and mudflats have been filled, drained, or diked. Today, there are about 40,000 acres of tidal marsh remaining in the Bay, and most of these marshes are in a degraded condition (San Francisco Estuary Institute 1998). The loss, conversion, and degradation of bayland habitats have had a major impact on many of the bayland's communities of plants and animals.

Most of the wildlife species inhabiting the project site and surrounding area include those typically found in moderate to heavily disturbed habitats. These animals include mostly small birds and waterfowl, which use the marshes and open water habitat along the bay and slough channels for foraging, nesting, and resting. Biological Resources Table 1 lists the various wildlife species that were observed in the region surrounding the proposed project during a reconnaissance survey conducted by LSA Associates on June 21, 2000.

**Biological Resources Table 1: Regionally Occurring Wildlife Species that were Observed During Reconnaissance Surveys Conducted in the Project Area and Surrounding Area.**

<u>Common Name</u>	<u>Scientific Name</u>
Killdeer	( <i>Charadrius vociferous</i> )
American kestrel	( <i>Falco sparverius</i> )
Mourning dove	( <i>Zenaida macroura</i> )
European starling	( <i>Sturnus vulgaris</i> )
Brewer's blackbird	( <i>Euphagus cyanocephalus</i> )
House finch	( <i>Carpodacus mexicanus</i> )
House sparrow	( <i>Passer domesticus</i> )
Northern mockingbird	( <i>Mimus polyglottos</i> )
Barn swallow	( <i>Hirundo rustica</i> )
Ring-billed gull	( <i>Larus delawarensis</i> )
Herring gull	( <i>Larus argentatus</i> )
Black-necked stilt	( <i>Himantopus mexicanus</i> )
Snowy egret	( <i>Egretta thula</i> )
Forster's tern	( <i>Sterna forsteri</i> )
Long-billed curlew	( <i>Numenius americanus</i> )
Double-crested cormorant	( <i>Phalacrocorax auritus</i> )
Mallard	( <i>Anas platyrhynchos</i> )
Canada goose	( <i>Branta canadensis</i> )
Black-tailed jackrabbit	( <i>Lepus californicus</i> )

Due to the fact that the project site is predominantly paved with asphalt and is currently used as a United Airlines parking lot, there is no habitat for plants or sensitive plant or animal species. In addition, there are no new linears proposed for this project and all disturbances will be limited to on-site. Regionally, however, there are a variety of sensitive plant and animal species that have the potential to occur on the San Francisco peninsula. According to a special status plant and animal species list compiled from the California Natural Diversity Data Base (CNDDB) records of the California Department of Fish & Game (CDFG), five plant

and 21 animal species have the potential to occur within a 1-mile radius of the project area. Biological Resources Table 2 lists those special status plant and animal species with potential to occur within this range.

The proposed UGGPP is approximately 1-mile from SFIA land commonly referred to as the West-of-Bayshore property. This property is inhabited by the San Francisco garter snake and the California red-legged frog, which are both federally protected species under the Endangered Species Act of 1973, as amended. Neither species is known to occur east of U.S. Highway 101 at the SFIA. Therefore, implementation of the proposed project will not result in significant impacts to the San Francisco garter snake or the California red-legged frog.

## **DIRECT AND INDIRECT IMPACTS**

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### ***POWER PLANT FACILITY***

The proposed project site is predominantly paved with asphalt and is currently used as a parking lot by United Airlines. The proposed simple-cycle facility would include a single natural gas fired combustion turbine generator and Selective Catalytic Reduction (SCR) system with a 140-foot stack. The facility would also include a gas compressor, a 115 kV electrical switchyard, an ammonia injection system, a mobile water treatment system, and control trailer. No permanent buildings would be erected for the proposed project and the existing road network would be used to service the facility. The proposed facility would cause no change in habitat quality or values than what already exists at the site. Further, there are no special status plant or animal species that are known to occur on or in the immediate vicinity of the project site. Therefore, the construction and operation of the proposed project is not expected to adversely affect sensitive biological resources in the region.

**Biological Resources Table 2: Regionally Occurring Special Status Plant and Animal Species with the Potential to Occur within a 1-Mile Radius of the Project Area.**

<b><u>Plant Species</u></b>	<b><u>Status*</u> <u>(Federal/State/CNPS)</u></b>	<b><u>Habitat</u></b>
Marsh sandwort <i>Arenaria paludicola</i>	FE/SE/1B	Marshes and swamps
Point Reyes Bird's-beak <i>Cordylanthus maritimum</i> spp	FSC/___/1B	Coastal salt marsh
San Francisco popcorn flower <i>Plagiobothrys diffusus</i>	FSC/SE/1B	Grassland and coastal prairie
Hairless popcorn flower <i>Plagiobothrys glaber</i>	___/___/1A	Coastal salt marsh, meadows, and seeps
California Sea Bite <i>Suaeda californica</i>	FE/___/1B	Margins of coastal salt marshes
<b><u>Animal Species</u></b>	<b><u>Status*</u> <u>(Federal/State)</u></b>	<b><u>Habitat</u></b>
Tidewater goby <i>Eucyclogobius newberryi</i>	FE/CSC	Shallow brackish lagoons and lower stream reaches
Steelhead <i>Oncorhynchus mykiss irideus</i>	FT/___	Coastal streams
California red-legged frog <i>Rana aurora draytonii</i>	FT/CSC	Perennial and seasonal ponds, creeks, seeps, adjacent riparian corridors and grasslands
Western pond turtle <i>Clemmys marmorata</i>	FSC/CSC	Perennial and seasonal ponds and creeks, brackish sloughs
San Francisco Garter Snake <i>Thamnophis sirtalis tetrataenia</i>	FE/SE	Freshwater marshes, ponds, and slow moving streams
Short-eared Owl <i>Asio flammeus</i>	___/CSC (nesting)	Marsh and grassland Ground nesting
Western snowy plover <i>Charadrius alexandrinus Nivosus</i>	FT/CSC (nesting)	Sandy beaches, salt pond levees, and the bottom of dried salt ponds
Northern harrier <i>Circus cyaneus</i>	___/CSC (nesting)	Marsh and grassland Ground nesting
White-tailed kite <i>Elanus leucurus</i>	___/DFG (nesting)	Grassland Trees and shrub habitat for nesting
American peregrine falcon <i>Falco peregrinus anatum</i>	___/SE (nesting)	Shorelines, grasslands, transmission towers

Salt-marsh common yellowthroat <i>Geothlypis trichas sinuosa</i>	FSC/CSC	Associated with fresh and salt marsh that provide continuous cover for foraging
Loggerhead shrike <i>Lanius ludovicianus</i>	FSC/CSC	Grassland and open habitat with shrubs or trees for perches
Alameda song sparrow <i>Melospiza melodia pusillula</i>	FSC/CSC	Marshes, wetlands, grassland
Long-billed curlew <i>Numenius americanus</i>	___/CSC (nesting)	Cultivated fields, salt marshes, open mud flats
California brown pelican <i>Pelecanus occidentalis californicus</i>	FE/SE (nesting colony)	Sloughs, channels, and open water
Double-crested cormorant <i>Phalacrocorax auritus</i>	___/CSC	Sloughs, channels, and open water. Transmission towers for nesting
California black rail <i>Laterallus jamaicensis coturiculus</i>	FSC/ST	Salt marshes bordering larger bays. Associated with salt marshes, also found in brackish and freshwater marshes
California Clapper Rail <i>Rallus longirostris obsoletus</i>	FE/SE	Salt water marshes traversed by tidal sloughs
California Least Tern <i>Sterna antillarum browni</i>	FE/SE (nesting colony)	Sandy beaches, alkali flats, hard- pan surfaces such as bay fill, abandoned salt ponds, and aircraft runways
Salt marsh harvest mouse <i>Reithrodontomys raviventris raviventris</i>	FE/SE	Tidal salt marshes in central and northern San Francisco Bay, and it's tributaries, dominated by pickleweed ( <i>Salicornia spp.</i> )
Salt marsh wandering shrew <i>Sorex vagrans halicoetes</i>	FSC/CSC	Tidal salt marshes, dominated by pickleweed

\*Status

Federal

FE = Federally listed as Endangered  
FT = Federally listed as Threatened  
FC = Federal Candidate Species  
FSC = Federal Special Concern  
species

State

SE = State-listed as Endangered  
ST = State-listed as Threatened  
SCE = State candidate for listing as  
Endangered

SCT = State candidate for listing as  
Threatened

CSC = California Special Concern  
species

DFG = Fully Protected and Protected

\_\_\_ = No Status

CNPS\* (California Nature Plant Society)

1A: Extinct

1B: Rare or endangered in California and  
elsewhere

## ***TRANSMISSION FACILITIES***

Phase I of the UGGPP will connect to the transmission grid at the existing UCI switchyard adjacent to the project site. No linear transmission facilities will be required for Phase I of the UGGPP. Therefore, there would be no effect on sensitive biological resources in the area.

## ***GAS PIPELINE***

Phase I of the UGGPP will be fueled by the existing UCI natural gas pipeline. Since only in-plant piping will be required, there will be no adverse impacts to any sensitive biological resources in the area.

## ***HAZARDOUS WASTES***

Small quantities of hazardous wastes will possibly be generated during construction and operation of the simple-cycle facility. These may include batteries, lubricants, algacides, oil-water separator sludge, ammonia waste, combustion exhaust catalyst, solvents, and compressor wash water. All hazardous wastes generated during facility construction and operation will either be recycled or disposed of in a licensed Class I disposal facility, as appropriate. Managed and disposed of properly, these wastes should not cause significant environmental impacts to biological resources either on or off site.

## ***PROCESS WASTEWATER***

Water effluent will be discharged to UCI and no offsite water pipeline for wastewater discharge will be required for Phase I of UGGPP. The combined wastewater discharge from the plant will consist primarily of neutralized chemical wastes and the effluent from the oil water separator system. This combined wastewater stream will be discharged into the existing UCI sewer system and directed to the local sewer for disposal and subsequent treatment. Therefore, there will be no impacts to biological resources as a result of combined wastewater discharge associated with the proposed project.

## ***FACILITY CLOSURE***

The planned life of the simple-cycle facility is three years. El Paso plans to replace the Phase I facility with a 570 MW combined cycle power plant. El Paso plans to submit a separate Application for Certification for the replacement facility. If the Energy Commission approves that facility, the certification decision will include all appropriate and necessary conditions for the replacement of the Phase I facility and the eventual closure of the replacement facility.

If the replacement facility is not certified, the Phase I facility will be decommissioned following a plan that will be developed and submitted to the Energy Commission for review at least 12 months prior to facility closure. The permanent closure plan will include methods for compliance with various laws, ordinances, regulations, standards, and techniques for disposing of materials and equipment. For the same reasons as discussed with the construction and operational phases of the proposed

project, staff does not expect there will be biological resource impacts as a result of future decommissioning activities.

## **CUMULATIVE IMPACTS**

Cumulative impacts are those that result from the incremental impacts of an action added to other past, present, and reasonably foreseeable future actions, regardless of who is responsible for such actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.

Phase I of UGGPP is consistent with the current patterns of development and land use within the SFIA and city of South San Francisco. As previously mentioned, the proposed simple-cycle facility would replace an existing parking lot, which is located within an already heavily industrialized area. There are no natural habitats remaining on the project site. The closest area of natural habitat is the San Bruno Slough located approximately 200 feet north of the project site. All activities and disturbance would be limited to on-site and those areas directly adjacent to the proposed project would be unaffected. For these reasons, the proposed project is not expected to cause adverse effects to biological resources when considered in conjunction with other similar development projects.

## **MITIGATION**

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El Paso proposed to develop a mitigation strategy that maximizes the avoidance of impacts to sensitive species and their habitats. These measures included avoidance of wetlands and open water habitats, implementing a worker environmental awareness program and developing a Biological Resources Mitigation and Implementation Program (BRMIMP). Staff does not see the need to develop a BRMIMP for this project. However, staff agrees that a worker environmental awareness program is warranted. Staff also recommends prohibiting firearms and pets from the project site, and minimizing the use of herbicides and other hazardous chemicals in the project area. With the implementation of these mitigation measures, there would be no direct, indirect, or cumulative impacts to any sensitive species or their habitat.

## **CONCLUSIONS, AND RECOMMENDATIONS**

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### **CONCLUSIONS**

With the implementation of proposed mitigation measures, the proposed project will not have any impacts to any sensitive biological resources.

### **RECOMMENDATIONS**

Since the project will not have any significant impacts to sensitive biological resources, staff recommends approval of the proposed project.

## CONDITIONS OF CERTIFICATION

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The following Biological Resources Conditions of Certification are proposed by Energy Commission staff:

**BIO-1** The project owner shall develop and implement a CPM-approved Worker Environmental Awareness Program in which each of its employees, as well as employees of contractors and subcontractors who work on the project site or related facilities during construction and operation are informed about sensitive biological resources in the vicinity of the site and avoidance measures.

Protocol: The Worker Environmental Awareness Program must:

1. consist of an on-site or training center presentation in which supporting written material is made available to all participants;
2. discuss the locations and types of sensitive biological resources in the vicinity of the project;
3. state that all wetlands and areas of open water shall be avoided during construction and operation of the proposed project;
4. state that all equipment shall be stored in designated construction zones or areas that are currently considered non-sensitive species habitat;
5. state that pets shall not be permitted on the project site during construction activities;
6. state that all food-related trash shall be disposed of in closed containers only and regularly removed from the project site;
7. state that no firearms will be allowed in the project area; and
8. state that the use of all herbicides and other hazardous chemicals shall be minimized in the project area.

The specific program must be administered by a competent individual(s) acceptable to the CPM. Each participant in the on-site Worker Environmental Awareness Program shall sign a statement declaring that the individual understands and shall abide by the guidelines set forth in the program materials. The person administering the program shall also sign each statement.

**Verification:** At least 30 days prior to the start of site mobilization, the project owner shall provide copies of the Worker Environmental Awareness Program, all supporting materials, and the name and qualifications of the person(s) administering the program to the CPM for approval. The project owner shall state in the monthly compliance report the number of persons who have completed the training in the prior month. The signed statements for the construction phase shall be kept on file by the project owner and made available for examination by the CPM for a period of six months after the start of commercial operation. During project operation, signed statements for active project personnel shall be kept on file for a duration of their employment and for six months after termination.

## REFERENCES

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# **WATER & SOIL RESOURCES**

Testimony of Mike Krolak and Joe O'Hagan

## **INTRODUCTION**

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This analysis examines the water and soil resource aspects of the United Golden Gate Power Project Phase I (UGGPP), specifically focusing on the following areas of concern:

- whether project construction or operation will lead to accelerated wind or water erosion and sedimentation;
- how the project's demand for water affects surface or groundwater supplies;
- whether project construction or operation will lead to degradation of surface or groundwater quality; and
- whether the project will comply with all applicable laws, ordinances, regulations and standards.

## **LAWS, ORDINANCES, REGULATIONS, AND STANDARDS (LORS)**

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### **FEDERAL**

#### ***CLEAN WATER ACT***

The Clean Water Act (33 USC section 1257 et seq.) requires states to set standards to protect water quality. Point source discharges to surface water are regulated by this act through requirements set forth in a National Pollutant Discharge Elimination System (NPDES) Permit. Stormwater discharges during construction and operation of a facility also fall under this act and must be addressed through either a project specific or general NPDES permit. In California, the nine Regional Water Quality Control Boards (RWQCB) administer the requirements of the Clean Water Act. Section 404 of the act regulates the discharge of dredged or fill material into waters of the United States, including rivers, streams and wetlands. The Army Corp of Engineers (ACOE) issues site-specific or general (nationwide) permits for such discharges.

### **STATE**

#### ***PORTER-COLOGNE WATER QUALITY CONTROL ACT***

The Porter-Cologne Water Quality Control Act of 1967, Water Code section 13000 et seq., requires the State Water Resources Control Board (SWRCB) and the nine RWQCBs to adopt water quality criteria to protect state waters. These criteria include the identification of beneficial uses, narrative and numerical water quality standards and implementation procedures. The criteria for the project area are contained in the San Francisco Bay Basin Water Quality Control Plan (SWRCB

1995). This plan sets numerical and narrative water quality standards controlling the discharge of wastes with elevated temperature to the state's waters.

Section 13550 of the Water Code specifically identifies that the use of potable domestic water for industrial uses, if suitable recycled water is available, is an unreasonable use of water. The availability of recycled water is based upon a number of criteria, which must be taken into account by the SWRCB. These criteria are that: the quality and quantity of the reclaimed water are suitable for the use; the cost is reasonable, the use is not detrimental to public health, will not impact downstream users or biological resources, and will not degrade water quality.

## **LOCAL**

### ***SAN FRANCISCO INTERNATIONAL AIRPORT TENANT IMPROVEMENT GUIDE***

The San Francisco International Airport (SFIA) Tenant Improvement Guide (TIG) article 504 specifies storm, industrial and sewage system regulations for developments on the airport property. Section 504.8 (D)(1) states that "Sanitary sewage only shall be discharged into the sanitary system. No industrial waste or stormwater shall be discharged or connected to any sanitary sewer..." The project must comply with all discharge procedures, regulations and provisions regarding waste discharge as required by the guide.

Articles 502 and 503 contain design and materials standards for grading operations. Article 502 states that "a permit must be obtained before commencement of work, which may be part of the general tenant permit request." Related activities must conform to the requirements of articles 303 and 403, and other applicable articles or sections of the Guide as well.

## **ENVIRONMENTAL SETTING**

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The UGGPP is located in the South Bay planning subarea of the San Francisco Bay region. The project is located at the San Francisco International Airport (SFIA) in San Mateo County. The facility will be constructed on the northeastern portion of the SFIA site, just north of the United Airlines Maintenance Operations Center (UAMOC). The site footprint is located on a paved area that is currently used as a parking lot. The project site lies at an elevation of approximately 8 to 10 feet above mean sea level. Existing grade at the power plant site is less than 5 percent. The existing site drainage is sheet flow in nature and drains locally to the north and east. The groundwater elevation at the project varies from approximately 3.5 to 4.5 feet above mean sea level (El Paso 2000a, AFC page 5.5-7).

The project is located on the western shore of the Lower San Francisco Bay as defined by the San Francisco Regional Water Quality Control Board (SFRWQCB), within the South Bay Basin hydrologic planning area. The surface water of the Bay is located approximately 500 feet to the north; there is no surface water within the site footprint. The area has a Mediterranean climate, with mild wet winters and cool dry summers. Summer temperatures range from 50s to low 70s (°F) with winter temperatures ranging from mid 40s to mid 50s (°F). The prevailing winds blow from

the northwest at 5-10 mph throughout the area. Normal annual precipitation is approximately 19.7 inches, with the highest monthly average falling in January at 4.4 inches.

## **ENVIRONMENTAL IMPACTS**

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### **PROJECT SPECIFIC IMPACTS**

#### ***EROSION AND SEDIMENTATION***

Activities associated with facility construction on the two-acre site include grading and other earth moving activities. Excavation and disturbance of the soil surface structure leaves the soil particles vulnerable to detachment by rainfall. Grading activities may result in soil compaction, which increases stormwater runoff velocities, allowing more soil particles to be entrained in the runoff and carried off-site. Because the site is currently paved, soil compaction has most likely already occurred to a great extent. However, grading activities will expose the soil surface, making more soil particles available for entrainment. Alteration of natural drainages may cause runoff to cross-exposed surfaces leading to increased erosion. Sediment carried off-site is deposited in adjacent water bodies, which may degrade sensitive biological habitats or reduce drainage capacity leading to flooding. Dewatering activities associated with power plant construction may also lead to erosion. Exposed berms and spoil piles are especially vulnerable to water erosion.

Water erosion at the site should be slight once construction is completed, since the finished site will be leveled, paved, and drainage systems will be in place. Soil erosion during construction and the operation phase will be minimized though the use of standard erosion control measures identified in the Draft Erosion and Sediment Control Plan (ESCP) (EI Paso 2000c, Data Response 53). The primary protection measures will be erosion control Best Management Practices (BMPs), with sediment control BMPs used as backup.

During construction, these measures will include placement of sediment barriers, such as straw bales and silt fences, below the disturbed areas, but above the point where water leaves the construction area. Construction stockpile materials will have filter fencing placed downslope. After final grading, exposed surfaces will be sealed or covered with an impermeable surface. Wind erosion and dust will be suppressed by watering of construction areas, along with limiting activity when winds exceed 25 mph. Dust-suppression BMPs will be carried out to comply with Bay Area Air Quality Management District PM<sub>10</sub> rules and regulations. The construction contractor will be responsible for preparation, installation, and removal of temporary erosion control measures. A qualified person will monitor the contractor and subcontractor's performance of erosion control management.

During project operation, wind and water action can continue to erode unprotected surfaces. The Draft ESCP also contains permanent measures for erosion control to be employed during the operational phase of the UGGPP. After construction, the exposed soils remaining on the two-acre site will be paved to reduce wind and

water erosion. A runoff collection system of culverts and drainage piping combined with the surfaced traffic and work areas will help reduce erosion and sedimentation. Site drainages must be maintained to function correctly, including removal of excess material as needed. El Paso will provide further detail on permanent erosion and sedimentation controls in the Final ESCP.

During excavation, the need for dewatering and/or disposal of contaminated soils may arise. Because of the high groundwater levels, dewatering may become necessary during excavation. If this does occur, the water will be pumped into a holding tank until any settleable solids have settled to the bottom of the tank. No contaminated soils have been identified onsite. If contaminated soils are encountered, the soil will be segregated, sampled, and tested to determine the appropriate disposal or treatment method. The San Francisco International Airport Environmental Division and the San Mateo County Department of Environmental Health will be immediately notified.

There are no proposed linear facilities for the UGGPP. The project's electric interconnection will be through the existing United Cogeneration, Inc. (UCI) facility, and will be fueled by the UCI natural gas supply pipeline. Therefore, no additional erosion controls will be required to mitigate effects of linear facility construction for UGGPP Phase I.

The total area disturbed during facility construction will be approximately two acres. Because this area is less than five acres, it is not required by the SWRCB under the Clean Water Act that the Applicant prepare a Storm Water Pollution Prevention Plan.

## **WATER SUPPLY**

The project's water demand will be supplied by two entities, the United Airlines Metal Removal Plant (MRP), and the San Francisco International Airport (SFIA). MRP treats industrial waste from airport users and distributes that stream as effluent. The MRP will supply discharge water for process needs, including combustion turbine generator (CTG) inlet cooling and NO<sub>x</sub> emission reduction. MRP water will be treated on-site by a mobile demineralization system. This system will be recharged off-site. The treated process water will be stored on-site, providing backup and surge capacity. SFIA will supply potable water for sanitary needs and plant services. SFIA's water source is Hetch Hetchy Reservoir.

The average water demand from UGGPP is approximately 65 gallons per minute (gpm) (El Paso 2000c, data response 49, page 36). However, Jim Brady of WZI Inc. estimated UGGPP's average demand as approximately 106 gpm with a peak demand of 173 gpm (Brady 2000). The latter values reflect the most recent data available, and will be used by staff in evaluating UGGPP's water resource impacts.

El Paso stated that the UCI facility currently uses SFIA water but will be converting to the MRP effluent in the second quarter of 2001 (El Paso 2000c, data response 51, page 39). According to MRP, the UCI facility will have first priority of the effluent delivery (Vance 2000). UCI expects to use approximately 250 gpm (Brooks 2000).

MRP's current average demand is approximately 250 gpm. The majority of MRP water users use it as a supplement to other sources when needed. Bob Vance of MRP indicated that they could produce over 500 gpm (Vance 2000). When the MRP effluent demand runs high, MRP intends to supplement their delivery of discharge water with city water supplies to avoid service interruptions. From staff's current understanding of MRP's system, demand by UCI (250 gpm) and UGGPP (106 gpm) will total on average approximately 350 gpm of MRP's supply. When combined with MRP's average current user demand (250 gpm), MRP will be running extremely close to its capacity of approximately 600 gpm when UGGPP is operating, even without considering combined peak operation conditions for UGGPP and UCI.

SFIA's average demand is approximately two million gallons per day, fed by three 24-inch lines running at 120 lbs. of pressure. SFIA will be able to accommodate UGGPP's two-gpm (average) potable water demand (Leong 2000a).

Firewater will be supplied by a 24-inch fire main along North Field Road, adjacent to the facility. Fire protection can be provided to the facility by this line without compromising other users of the main (El Paso 2000a, AFC page 3.4-8).

## **WATER QUALITY**

Incorrect disposal of wastewater or inadvertent chemical spills can degrade soil, surface water and groundwater. UGGPP plans to dispose of turbine washwater through a service contractor. If the disposal contractor does not perform the washes, a qualified firm will handle the wash and the washwater will be stored in a holding tank until it can be disposed of. The disposal contractor will transport it offsite; under no conditions will the washwater enter the sewage system.

The Reverse Osmosis reject water will be disposed to the UCI cooling tower basin. The volume is anticipated to be approximately 15 gpm average, and is not expected to pose any contamination problems. UCI does not expect any capacity problems from the expected volume discharge.

Other waste streams include waste from a water sampling station, a utility basin for wash up, and equipment drains after passing through an oil/water separator (El Paso 2000c, response 52, page 41). It is anticipated that this waste stream will have a volume of less than 1 gpm on average and five-gpm peak.

El Paso anticipates this waste stream will be discharged to the airport sanitary system (El Paso 2000c, data response 52, page 41). However, Mel Leong, Assistant Deputy for Environment at SFIA, intends to require UGGPP to discharge such wastes to the airport industrial waste discharge system rather than the sanitary system, per section 504.8 of the SFIA Tenant Improvement Guide (Leong 2000b).

## **CUMULATIVE IMPACTS**

Temporary and permanent disturbance associated with construction of the proposed project will cause accelerated wind and water induced erosion. Implementation of the proposed mitigation measures should ensure that the

proposed project would not contribute to cumulative erosion and sedimentation impacts.

As discussed in the Water Supply impact section above, the UCI demand combined with UGGPP demand will require approximately 350 gpm on average. The current average demand at MRP is about 250 gpm. These factors combined, assuming current MRP demand does not change, will run MRP's delivery load very close if not over capacity under average conditions as staff understands MRP's system. The peak demand for the two facilities combined will be at least 425 gpm, and combined with the current demand, will exceed MRP's supply capacity. Jim Brady of WZI Inc. states that "...if the United [Airlines Maintenance Operations Center] utilizes new water conservation procedures, it may be that there is a shortfall in the MRP discharge" (Brady 2000). Such a shortfall would compound the extra demand placed on MRP supplies with the additional water supply demands of UGGPP and UCI.

As the project is proposed, it is possible that UGGPP may not always have a reliable supply of process water. This is not an environmental impact and is not necessarily a prohibitive issue, but staff recognizes this as a reliability concern for UGGPP's water supply. Alternative supplies may be necessary to provide UGGPP with a reliable water supply.

## **FACILITY CLOSURE**

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A temporary or planned permanent closure of the proposed UGGPP should not be a significant concern if site drainage and erosion are properly dealt with for any potential closure. Unexpected permanent closure may raise the potential for drainage and erosion problems due to a lack of maintenance of the facilities. Staff will require UGGPP to address this concern in their closure plan.

El Paso intends to replace Phase I of UGGPP with a 570 MW combined-cycle facility. El Paso will file a separate Application for Certification for this project. If the Energy Commission certifies the replacement project, that decision will include all appropriate and necessary conditions for the replacement of Phase I and the eventual closure of the replacement facility.

## **MITIGATION**

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### **EROSION AND SEDIMENTATION**

UGGPP submitted an erosion and sediment control plan that identifies best management practices to control erosion, sedimentation and the discharge of stormwater runoff (El Paso 2000c, data response 53).

### **WATER SUPPLY**

No mitigation measures identified.

## **WATER QUALITY**

UGGPP will not discharge combustion turbine washwater to sanitary waste systems. The washwater will be disposed of offsite by a qualified contractor. Water from the oil/water separator and equipment drains will not be discharged to the SFIA sanitary system. Hazardous materials will be stored in suitable containers, and these containers will be stored above impervious surfaces and bermed to prevent possible water contamination.

## **COMPLIANCE WITH APPLICABLE LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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Section 13550 of the Water Code identifies that the use of potable domestic water for industrial uses, if suitable recycled water is available, is an unreasonable use of water. Section 13550 also requires that the recycled water must be provided at a reasonable cost to the user. It states that "...in determining reasonable cost, the state board shall consider all relevant factors, including, but not limited to, the present and projected costs of supplying, delivering, and treating potable domestic water for these uses and the present and projected costs of supplying and delivering recycled water for these uses, and shall find that the cost of supplying the treated recycled water is comparable to, or less than, the cost of supplying potable domestic water." State Water Resources Control Board staff interpret this as to require that the cost of using recycled water (including delivery and treatment costs) cannot be greater than that using potable water.

UGGPP is using MRP effluent which staff acknowledges as recycled water for the purposes of this project. The MRP effluent, however, during high demand periods, may contain potable water from the city supply. Staff concludes that as proposed, UGGPP is using the recycled water that is available to them at reasonable cost.

The Applicant's proposed plan to discharge waste water from "a water sampling station, a utility basin for wash up, and equipment drains after passing through an oil/water separator" to SFIA's sanitary sewage system may not comply with the SFIA Tenant Improvement Guide (SFIATIG). Section 504.8 (D)(1) states that "Sanitary sewage only shall be discharged into the sanitary system. No industrial waste or stormwater shall be discharged or connected to any sanitary sewer..." Sanitary waste is defined in section 504.8 (C)(7) as "water carried waste from toilets, lavatories, kitchen sinks, slop sinks, laundry facilities, airport holding tanks, etc. and as used herein excludes industrial waste and stormwater." The streams indicated above more likely fall under the definition of industrial waste as defined in section 504.8 (C)(9): "...any substances, as distinct from sanitary sewage, including but not limited to liquid, solid, gaseous, and radioactive substances resulting from any operation of whatever nature that is discharged."

In addition, no water quality data of the above mentioned wastewater streams were provided in the AFC or the data responses. The SFIA TIG sets water quality parameters for waste streams, identified in section 504.8. Before UGGPP will be allowed to discharge waste to the SFIA industrial waste systems, they will be

required to submit water quality data for projected waste streams to SFIA and the Commission. If the discharges do not meet the criteria set forth in this section of the SFIATIG, the Applicant may be required by SFIA to dispose of such waste offsite or perform pretreatment of the waste as authorized in section 504.8 (G).

## CONCLUSIONS AND RECOMMENDATIONS

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Staff concludes that the proposed UGGPP will not contribute to any significant project specific impacts to soil resources. Use of recycled wastewater from the United Airlines MRP for project process water demand is a beneficial use of this water source. Use of potable quality water from the MRP for occasional process make-up during MRP high demand periods will not adversely affect potable water supplies. Disposal of certain waste water streams into SFIA's sanitary waste system will violate SFIA's Tenant Improvement Guide as proposed; these streams must be discharged to appropriate waste systems. Dependence solely on United MRP effluent for process water may result in water shortage, affecting UGGPP's reliability.

## CONDITIONS OF CERTIFICATION

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**SOIL & WATER 1:** Prior to the initiation of site mobilization, the project owner shall submit a final erosion control plan for San Francisco Airport Commission review and Energy Commission staff approval. The final plan shall contain all the elements of the draft plan with changes made to address the final design of the project. Stormwater controls shall be addressed in the plan as well.

**Verification:** The final erosion control plan shall address all comments of the San Francisco International Airport and be submitted to the Energy Commission Compliance Project Manager (CPM) for approval 30 days prior to the initiation of site mobilization.

**SOIL & WATER 2:** Prior to any site mobilization operations, the project owner shall obtain a grading permit from the San Francisco Airport Commission.

**Verification:** No less than 30 days prior to site mobilization, the project owner will submit for approval one set of design plans/specifications and other supporting data specified within Articles 502 and 503 of the San Francisco International Airport Tenant Improvement Guide to the CPM. Upon CPM approval, the project owner shall submit the application and required plans to the San Francisco Airport Commission.

**SOIL & WATER 3:** Prior to construction, the project owner shall receive approval from the San Francisco Airport Commission for the disposal of any wastewater stream to be discharged into airport systems as authorized under Article 504 of the San Francisco International Airport Tenant Improvement



Guide. The project owner shall submit descriptions of all wastewater streams and expected volumes to be discharged to San Francisco International Airport systems to San Francisco Airport Commission and Energy Commission staff. These descriptions shall include chemical water quality analyses.

**Verification:** Thirty days prior to start of construction, a wastewater analysis shall be submitted to the CPM for review and the San Francisco Airport Commission for approval. Written copies of documents verifying approval by the San Francisco Airport Commission shall be sent to the Energy Commission CPM. Annual Compliance Reports reports shall contain data regarding wastewater quality, volume, and means of disposal.

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# **GEOLOGY AND PALEONTOLOGY**

Testimony of Robert Anderson

## **INTRODUCTION**

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The geology and paleontology section discusses the project's potential impacts regarding geological hazards, geological and paleontological resources, and surface water hydrology. The purpose of this analysis is to verify that the applicable laws, ordinances, regulations, and standards (LORS) have been identified and that the project can be designed and constructed in accordance with all applicable LORS, and in a manner that protects environmental quality and assures public health and safety. Energy Commission staff's objective is to ensure that there will be no significant adverse impacts to significant geological and paleontological resources, and surface water hydrology during project construction, operation and closure. The section concludes with the staff's proposed monitoring and mitigation measures with respect to geological hazards, geological and paleontological resources, and surface water hydrology, with the inclusion of six conditions of certification.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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The applicable LORS are listed in the AFC, in Sections 5.3, 5.5, 5.8, and 7.0 (El Paso 2000a). A brief description of the LORS for surface water hydrology, paleontological resources, and geological hazards and resources follows:

### **FEDERAL**

There are no federal LORS for geological hazards and resources, paleontological resources, or grading for the proposed project.

### **STATE AND LOCAL**

The California Building Code (CBC) 1998 edition is based upon the Uniform Building Code (UBC), 1997 edition, which was published by the International Conference of Building Officials. The CBC is a series of standards that are used in the investigation, design (Chapters 16 and 18) and construction (including grading and erosion control as found in Appendix Chapter 33). The CBC supplements the UBC's grading and construction ordinances and regulations.

The California Environmental Quality Act (CEQA) Guidelines Appendix G provides a checklist of questions that a lead agency should normally address if relevant to a project's environmental impacts.

Section (V) (c) asks if the project will directly or indirectly destroy a unique paleontological resource or site or unique geological feature.

Sections (VI) (a), (b), (c), (d), and (e) pose questions that are focused on whether or not the project would expose persons or structures to geological hazards.

Sections (X) (a) and (b) pose questions about the project's effect on mineral resources.

The Standard Procedures, Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources (SVP 1994) are a set of procedures and standards for assessing and mitigating impacts to vertebrate paleontological resources. They were adopted in October 1994 by a national organization of vertebrate paleontologists (the Society of Vertebrate Paleontologists).

## SETTING

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The United Golden Gate Power Project (project) is located in the San Francisco Bay sub-unit of the Coast Range physiographic province. The project is not crossed by known active faults. No surface water bodies are located at the project.

Site geology consists of artificial fill, alluvium, and Bay Muds. The project site is located within a parking lot, paved with asphaltic cement, adjacent to the United Airlines Maintenance facility at the San Francisco Airport. The parking lot is underlain by artificial fill. Bedrock at the site consists of claystone and sandstone of the Franciscan formation. Bedrock at the project occurs at a depth of 150 feet below existing grade (El Paso 2000a, AFC page 5.3-13). There is an unconformity between the bedrock and the overlying alluvium, since the age of the earth units abruptly changes from Cretaceous age bedrock to Pleistocene age alluvium.

The fill beneath the parking lot consists of loose to compact brown fine silty sand and gravel. The fill varies in thickness from 8 to 11 feet (El Paso 2000a, AFC Appendix I, page 5). There are two units of mud beneath the project area, Young Bay Muds and Old Bay Muds. The Young Bay Muds beneath the fill consist of very soft to soft gray to dark gray silty clay with some intermittent layers of peat. The Old Bay Muds beneath the site consist of gray to blue-gray stiff to very stiff clay with traces of sand and silt. The Bay Mud units are separated by a unit of alluvium. The alluvium is made up of stiff to hard sandy clay and dense to very dense clayey and silty sand. The Old Bay Muds tend to be more consolidated than the Young Bay Muds and tend to provide better foundation support than the Young Bay Muds.

The project site lies at an elevation of approximately 8 to 10 feet above mean sea level. Existing grade at the power plant site is less than 5%. The existing site drainage is sheet flow in nature and drains locally to the north and east. The groundwater elevation at the project varies from approximately 3.5 to 4.5 feet above mean sea level. (El Paso 2000a, AFC page 5.5-7 and Appendix I, page 6).

## ANALYSIS AND IMPACTS

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### GEOLOGICAL HAZARDS

#### ***FAULTING AND SEISMICITY***

The project is located within seismic zone 4 as delineated on Figure 16-2 of the 1998 edition of the California Building Code. Energy Commission staff reviewed the California Division of Mines and Geology publications "Geologic Map of the San Francisco-San Jose Quadrangle," dated 1990 (CDMG 1990) and the "Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions," dated 1994 (CDMG 1994). Energy Commission staff visited the project site on November 29, 2000, and did not observe any surface faulting at the project site. No active faults are known to cross the power plant footprint. The closest known faults to the project site are the Hillside and Serra faults. Both faults are not considered to be active faults. The Hillside fault is the closest known fault and is located 0.9 miles north of the project. The Serra fault lies 1.8 miles to the west of the project. The closest active fault to the project is the San Andreas fault which is located 2.2 miles west of the project. The average peak horizontal ground acceleration estimated for the site is 0.53g (El Paso 2000a, AFC page 5.3-14) and is based upon a moment magnitude 8.0 earthquake occurring along the San Andreas fault at a distance of 2.2 miles from the project.

#### ***LIQUEFACTION, HYDROCOMPACTION, SUBSIDENCE, AND EXPANSIVE SOILS***

Liquefaction is a condition in which a cohesionless soil may lose shear strength due to a sudden increase in pore water pressure. Three of the parameters used to assess the potential for liquefaction are the density, depth to groundwater, and the peak horizontal ground acceleration estimated for the site. The depth to groundwater at the project is approximately 5 feet below existing grade. The peak horizontal ground acceleration for the design earthquake is 0.53g, which may be high enough when combined with the shallow ground water and locally loose sands to trigger liquefaction at the project during a large (magnitude 6.5 or above) earthquake located on the San Andreas fault near the project. The Applicant has acknowledged that the site is located in an area of high liquefaction susceptibility (El Paso 2000a, AFC page 5.3-14). It is recommended by Energy Commission staff that the Applicant conduct a detailed liquefaction analysis of the project site and linear facilities prior to the completion of the final design for the project. This is the subject of the proposed Condition of Certification **GEO-2** below.

Hydrocompaction is the process of the loss of soil volume upon the application of water. The fill at the site varies in consistency from loose to dense and is saturated below the water table. The fill at the site is capped with two inches of asphalt cement. This means that very little water from surface water runoff comes into contact with the fill. Infiltration of water through cracks in the parking lot can not be ruled out, but would not necessarily allow enough water to be a concern for potential hydrocompaction. Since the fill is capped with asphalt and partially to completely saturated with water, it is not considered to be prone to hydrocompaction.

Subsidence of surficial and near surface soil units may be induced at the site by either strong ground shaking due to a large nearby earthquake, or by consolidation of loose or soft soils due to heavy loading of the soils by large structures (El Paso 2000a, AFC Appendix I, pages 11-12). The Applicant has proposed the use of piles to mitigate the potential for subsidence of sensitive equipment and structures.

Soils that contain a high percentage of expansive clay minerals are prone to expansion, if subjected to an increase in water content. Expansive soils are usually measured with an index test such as the expansive index potential. In order for a soil to be a candidate for testing, the soil must have a high clay content and the clay must have a high shrink-swell potential and a high plasticity index. The artificial soil units at the project that are above the water table are made up of silty sand and gravel, and are not prone to expansion.

## **LANDSLIDES**

No landslides were observed on or adjacent to the proposed power plant footprint during a staff site visit on November 29, 2000. Landsliding potential at the proposed power plant site is considered to be negligible, since the project is located on a parking lot with less than a five per cent slope.

## **GEOLOGICAL AND PALEONTOLOGICAL RESOURCES**

There are no known geological or paleontological resources at the proposed power plant location. The project location is designated as Mineral Resources Zone-1, an area where there are no known mineral resources (El Paso 2000a, AFC page 5.3-17).

Regarding paleontological resources, Energy Commission staff has reviewed the paleontological resources assessment (El Paso 2000a, AFC section 5.8 and Appendix L). A paleontological resource survey was conducted for the proposed project on September 20, 2000. Prior to conducting the survey, an archive search and literature review was conducted. No significant paleontological resources were reported by the applicant's paleontologist during a field survey of the project site and during the archive and literature reviews. No paleontological resources were observed by Energy Commission staff at the project site during a site visit on November 29, 2000. Energy Commission staff has proposed conditions of certification, below, that will enable the applicant to mitigate impacts upon paleontological resources to a less than significant level should they be encountered during construction, operation, and closure of the project.

## **SURFACE WATER HYDROLOGY**

The power plant footprint is located in a 100-year flood zone since it is located in an infilled tidal marshland area adjacent to the west side of San Francisco Bay.

Minimum grade for the power plant area will be 1 per cent and all drainage will be directed away from buildings within the footprint. The design storm event is the 10-year 6-hour storm (NOAA 1973), with a precipitation amount of 1.8 inches.

Drainage at the site is sheet flow to the east and north where it is collected into a 36-inch diameter drainage pipe and conveyed to the local waste-water treatment plant for treatment and disposal. The proposed surface water drainage system is

anticipated to be able to accommodate the surface water run-off from the project site.

### ***TSUNAMI***

The Applicant has indicated that the main flood hazard for the site would be from a tsunami (El Paso 2000a, AFC page 5.5-1). A tsunami is a wave of water that may be generated by an earthquake or a large underwater landslide. The San Francisco Bay has several faults that cross through it. In addition the applicant has indicated that at least 19 tsunami have been recorded at the entrance to the San Francisco Bay since 1868 (El Paso 2000a, AFC page 5.3-16). The estimated tsunami run-up for a tsunami originating outside of the San Francisco Bay in the vicinity of the project was indicated by the Applicant to be approximately 5.7 feet. It is noted that a minor tsunami was reported after the Loma Prieta earthquake. The run-up associated with the Loma Prieta earthquake tsunami was 0.1 feet.

## **SITE SPECIFIC IMPACTS**

No geological resources will be impacted by the construction, and operation of the project. Energy Commission staff consider that there is a low probability that vertebrate fossils will be encountered during construction of the power plant and related linear facilities. However, drilling and excavation operations of the Young Bay Mud at the project site are considered to have a minor potential impact to paleontological resources. The adoption and implementation of the proposed conditions of certification for paleontological resources should mitigate any potential impacts to paleontological resources associated with the construction of this project.

## **CUMULATIVE IMPACTS**

It is staff's opinion that the potential for a significant adverse cumulative impact on paleontological resources, geological resources, or surface water hydrology is unlikely, if the Phase I UGGPP is constructed according to the proposed conditions of certification. This opinion is based on the fact that the site is not known to have significant paleontological or geological resources.

## **FACILITY CLOSURE**

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A definition and general approach to closure is presented in the **General Conditions** section of this document. Facility closure activities are not anticipated to impact geological or paleontological resources. This is due to the fact that no paleontological or geological resources are known to exist at the power plant location. In addition, decommissioning and closure of the power plant should not negatively affect geological or paleontological resources since the majority of the ground disturbed in plant decommissioning and closure would have been disturbed in the construction of the plant. Surface water hydrology impacts will depend upon the closure activities proposed.

## MITIGATION

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Based upon the literature and archives search, field surveys and the preliminary geotechnical investigation for the project, the applicant has proposed monitoring and mitigation measures to be followed during the construction of the power plant, related natural gas supply line, electrical transmission line, and the waste water pipelines. The proposed conditions of certification are to allow the Energy Commission Compliance Project Manager (CPM) and the applicant to adopt a compliance monitoring scheme that will ensure LORS applicable to geological hazards, geological and paleontological resources, and surface water hydrology for the project are complied with.

## CONCLUSION AND RECOMMENDATIONS

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The applicant will likely be able to comply with applicable LORS. The project should have no adverse impact with respect to geological and paleontological resources and surface water hydrology. Staff proposes to ensure compliance with applicable LORS for geological hazards, geological and paleontological resources and surface water hydrology with the adoption of the proposed conditions of certification listed below, and the conditions of certification for surface water hydrology located in the **Soil and Water Resources** section of this document.

## PROPOSED CONDITIONS OF CERTIFICATION

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**GEO-1** Prior to the start of construction, the project owner shall assign to the project an engineering geologist(s), certified by the State of California, to carry out the duties required by the 1998 edition of the California Building Code (CBC) Appendix Chapter 33, Section 3309.4. The certified engineering geologist(s) assigned must be approved by the Compliance Project Manager (CPM). The functions of the engineering geologist can be performed by the responsible geotechnical engineer, if that person has the appropriate California license.

**Verification:** At least 30 days (or a lesser number of days mutually agreed to by the project owner and the Chief Building Official (CBO)) prior to the start of construction, the project owner shall submit to the CPM for approval the name(s) and license number(s) of the certified engineering geologist(s) assigned to the project. The submittal should include a statement that CPM approval is needed. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of its findings. If the engineering geologist(s) is subsequently replaced, the project owner shall submit for approval the name(s) and license number(s) of the newly assigned individual(s) to the CPM. The CPM will approve or disapprove of the engineering geologist(s) and will notify the project owner of the findings.

**GEO-2** Prior to the completion of the final design of the project, the owner shall have a liquefaction analysis conducted for the power plant site and related



linear facilities. The liquefaction analysis shall be implemented by following the recommended procedures contained in "Recommended Procedures for Implementation of California Division of Mines and Geology Special Publication 117, Guidelines for Analyzing and Mitigating Liquefaction Hazards in California" dated March 1999. (The document is available through the Southern California Earthquake Center at the University of Southern California.)

**Verification:** The project owner shall include in the application for a grading permit (see Condition of Certification **GEO-3**, below) a report of the liquefaction analysis, and a summary of how the results of this analysis were incorporated into the project grading plan, for the CBO's review and comment.

**GEO-3** The assigned engineering geologist(s) shall carry out the duties required by the 1998 CBC, Appendix Chapter 33, Section 3309.4 Engineered Grading Requirement, and Section 3318.1 – Final Reports. Those duties are:

1. Prepare the Engineering Geology Report. This report shall accompany the Plans and Specifications when applying to the CBO for the grading permit.
2. Monitor geologic conditions during construction.
3. Prepare the Final Engineering Geology Report.

**Protocol:** The Engineering Geology Report required by the 1998 CBC Appendix Chapter 33, Section 3309.3 Grading Designation, shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and an opinion on the adequacy of the site for the intended use as affected by geologic factors.

The Final Engineering Geology Report to be completed after completion of grading, as required by the 1998 CBC Appendix Chapter 33, Section 3318.1, shall contain the following: A final description of the geology of the site and any new information disclosed during grading; and the effect of same on recommendations incorporated in the approved grading plan. The engineering geologist shall submit a statement that, to the best of his or her knowledge, the work within their area of responsibility is in accordance with the approved Engineering Geology Report and applicable provisions of this chapter.

**Verification:** (1) Within 15 days after submittal of the application(s) for grading permit(s) to the CBO, the project owner shall submit a signed statement to the CPM stating that the Engineering Geology Report has been submitted to the CBO as a supplement to the plans and specifications and that the recommendations contained in the report are incorporated into the plans and specifications. (2) Within 90 days following completion of the final grading, the project owner shall submit copies of the Final Engineering Geology Report required by the 1998 CBC

Appendix Chapter 33, Section 3318 Completion of Work, to the CBO, and to the CPM on request.

**PAL-1** Prior to the start of project construction, the designated paleontological resource specialist shall prepare a Paleontological Resources Monitoring and Mitigation Plan to identify general and specific measures to minimize potential impacts to sensitive paleontological resources, and submit this plan to the CPM for review and approval. After CPM approval, the project owner's designated paleontological resource specialist shall be available to implement the Monitoring and Mitigation Plan, as needed, throughout project construction.

Protocol: In addition to the project owner's adoption of the guidelines of the Society of Vertebrate Paleontologists (SVP 1994) the owner shall develop a Paleontological Resources Monitoring and Mitigation Plan that shall include, but not be limited to, the following elements and measures:

- The name and resume and the availability for its designated paleontological resource specialist, to the CPM for review and approval. The CPM shall provide approval or disapproval of the proposed paleontological resource specialist;
- A discussion of the sequence of project-related tasks, such as any pre-construction surveys, fieldwork, flagging or staking; construction monitoring; mapping and data recovery; fossil preparation and recovery; identification and inventory; preparation of final reports; and transmittal of materials for curation;
- Identification of the person(s) expected to assist with each of the tasks identified within this condition for certification, and a discussion of the mitigation team leadership and organizational structure, and the inter-relationship of tasks and responsibilities;
- Where monitoring of project construction activities is deemed necessary, the extent of the areas where monitoring is to occur and a schedule for the monitoring;
- An explanation that the designated paleontological resource specialist shall have the authority to halt or redirect construction in the immediate vicinity of a vertebrate fossil find until the significance of the find can be determined;
- A discussion of equipment and supplies necessary for recovery of fossil materials and any specialized equipment needed to prepare, remove, load, transport, and analyze large-sized fossils or extensive fossil deposits;
- Inventory, preparation, and delivery for curation into a retrievable storage collection in a public repository or museum, which meets the Society of Vertebrate Paleontologists standards and requirements for the curation of paleontological resources; and

- Identification of the institution that has agreed to receive any data and fossil materials recovered during project-related monitoring and mitigation work, discussion of any requirements or specifications for materials delivered for curation and how they will be met, and the name and phone number of the contact person at the institution.

The project owner shall maintain in its compliance files copies of signed contracts or agreements with the designated paleontological resource specialist and other qualified research specialists who will ensure the necessary data and fossil recovery, mapping, preparation for analysis, analysis, identification and inventory, and preparation for and delivery of all significant paleontological resource materials collected during data recovery and mitigation for the project. The project owner shall maintain these files for a period of three years after completion and approval of the CPM-approved Paleontological Resources Report and shall keep these files available for periodic audit by the CPM.

**Verification:** At least thirty (30) days prior to the start of construction on the project, the project owner shall provide the CPM with a copy of the Paleontological Resources Monitoring and Mitigation Plan prepared by the designated paleontological resource specialist for review and approval. If the plan is not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes. If the approved, designated paleontological resource specialist is replaced prior to completion of project mitigation, the project owner shall obtain CPM approval of the new designated paleontological resource specialist by submitting the name and qualifications of the proposed replacement to the CPM, at least ten (10) days prior to the termination or release of the preceding designated paleontological resource specialist.

**PAL-2** Prior to the start of construction, and throughout the project construction period as needed for all new employees, the project owner and the designated paleontological resource specialist shall prepare and conduct CPM-approved training to all project managers, construction supervisors, and workers who operate ground disturbing equipment. The project owner and construction manager shall provide the workers with the CPM-approved set of procedures for reporting any sensitive paleontological resources or deposits that may be discovered during project-related ground disturbance.

**Protocol:** The paleontological training program shall discuss the potential to encounter paleontological resources in the field, the sensitivity and importance of these resources, and the legal obligations to preserve and protect such resources.

The training shall also include the set of reporting procedures that workers are to follow if paleontological resources are encountered during project activities. The training program shall be presented by the designated paleontological resource specialist and may be combined with other training

programs prepared for cultural and biological resources, hazardous materials, or any other areas of interest or concern.

**Verification:** At least (30) thirty days prior to the start of project construction, the project owner shall submit to the CPM for review, comment, and written approval, the proposed employee training program and the set of reporting procedures the workers are to follow if paleontological resources are encountered during project construction.

If the employee training program and set of procedures are not approved, the project owner, the designated paleontological resource specialist, and the CPM shall meet to discuss comments and negotiate necessary changes, before the beginning of construction.

Documentation for training of additional new employees shall be provided in subsequent Monthly Compliance Reports, as appropriate.

**PAL-3** The project owner shall ensure preparation of a Paleontological Resources Report by the designated paleontological resource specialist. The Paleontological Resources Report shall be completed following completion of the analysis of the recovered fossil materials and related information. The project owner shall submit the paleontological report to the CPM for approval.

**Protocol:** The report shall include (but not be limited to) a description and inventory list of recovered fossil materials; a map showing the location of paleontological resources encountered; determinations of sensitivity and significance; and a statement by the paleontological resource specialist that project impacts to paleontological resources have been mitigated.

**Verification:** The project owner shall submit a copy of the Paleontological Resources Report to the CPM for review and approval under a cover letter stating that it is a confidential document. The report is to be prepared by the designated paleontological resource specialist within 90 days following completion of the analysis of the recovered fossil materials.

## REFERENCES

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- California Division of Mines and Geology (CDMG). 1990. Geologic Map of the San Francisco-San Jose Quadrangle, Scale 1:250,000.
- California Division of Mines and Geology (CDMG). 1994. Fault Activity Map of California and Adjacent Areas with Locations and Ages of Recent Volcanic Eruptions, Scale: 1:750,000.
- El Paso Merchant Energy Company (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.
- National Oceanic and Atmospheric Administration (NOAA). 1973. Precipitation-Frequency Atlas of the Western United States, Volume XI-California, Figure 31.
- Society of Vertebrate Paleontologists (SVP). 1994. Measures for Assessment and Mitigation of Adverse Impacts to Non-renewable Paleontologic Resources: Standard Procedures. October 1994.



# **FACILITY DESIGN**

Testimony of Steve Baker, Al McCuen and Kisabuli

## **INTRODUCTION**

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Facility Design encompasses the civil, structural, mechanical and electrical engineering design of the project. The purpose of the Facility Design analysis is to:

- verify that the laws, ordinances, regulations and standards (LORS) applicable to the design and construction of the project have been identified;
- verify that the project and ancillary facilities have been described in sufficient detail, including proposed design criteria and analysis methods, to provide reasonable assurance that the project can be designed and constructed in accordance with all applicable LORS, and in a manner that protects environmental quality and assures public health and safety;
- determine whether special design features should be considered during final design to deal with conditions unique to the site which could influence public health and safety or environmental protection; and
- describe the design review and construction inspection process and establish Conditions of Certification that will be used to monitor and ensure compliance with the intent of the LORS and any special design requirements.

## **FINDINGS REQUIRED**

The Warren Alquist Act requires the commission to “prepare a written decision... which includes...(a) Specific provisions relating to the manner in which the proposed facility is to be designed, sited, and operated in order to protect environmental quality and assure public health and safety [and]...(d)(1) Findings regarding the conformity of the proposed site and related facilities with public safety standards...and with other relevant local, regional, state and federal standards, ordinances, or laws” (Pub. Resources Code, §25523).

## **SUBJECTS DISCUSSED**

Subjects discussed in this analysis include:

- Identification of the LORS applicable to facility design;
- Evaluation of the applicant’s proposed design criteria, including the identification of those criteria that are essential to ensuring protection of the environment and public health and safety;
- Proposed modifications and additions to the Application for Certification (AFC) that are necessary to comply with applicable LORS; and
- Conditions of Certification proposed by staff to ensure that the project will be designed and constructed to protect environmental quality and assure public health and safety and comply with all applicable LORS.

## SETTING

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El Paso Merchant Energy Company (El Paso or the applicant) filed an application for certification (AFC) for Phase I of United Golden Gate Power Project (UGGPP). El Paso is seeking approval to construct Phase I of UGGPP (the project) under the expedited permitting process of Public Resources Code section 25552.

Phase I of UGGPP is a 51-megawatt (MW) simple-cycle power plant that El Paso intends to operate for a maximum of three years as a peaking power plant. El Paso proposes locating the project at the San Francisco International Airport (SFIA) in San Mateo County. The completed UGGPP will be a 570 MW combined cycle power plant at the same location. El Paso plans to submit an AFC for Phase II of the UGGPP in December 2000, which will be subject to a separate certification proceeding.

For Phase I, electrical power will be generated using a single natural gas fired LM6000 combustion turbine. The project will use the existing connections at the adjacent United Cogeneration Inc. (UCI) cogeneration power plant for natural gas supply, transmission interconnection, and water supply. The project will also make use of existing SFIA potable water and sanitary waste systems.

## ***FACILITY LOCATION AND SITE DESCRIPTION***

The site is within the boundaries of the SFIA, and is adjacent to the UCI facility site and the United Airlines Maintenance Operations Center (UMOC). The project will occupy less than 2 acres of the UMOC parking lot.

## **TOPOGRAPHY**

The site is generally flat with a slope of less than 1%. Elevation ranges from +8 to +10 feet above sea level.

The site lies in seismic zone 4, the zone of greatest seismic shaking in the United States. Additional engineering design details are contained in the Application for Certification (AFC), in Appendices C through G (El Paso 2000a). For more information on the site and related project description, please see **Project Description**.

## **LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)**

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The applicable LORS for each engineering discipline (civil, structural, mechanical and electrical) are described in the AFC (El Paso 2000a, §§ 3.0, 4.0 and 5.3; Table 7.1-1 and Appendices C through G).

## **ANALYSIS**

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The basis of this analysis is the applicant's proposed analysis and construction methods and list of LORS and design criteria set forth in the AFC.



## **FACILITY CIVIL/STRUCTURAL FEATURES**

### ***POWER GENERATION EQUIPMENT***

The LM 6000 CTG and SCR system will be supported on pile foundations to mitigate adverse effects of long-term settlement. Piles will support the imposed load through a combination of skin friction mobilized along the pile-soil interface and end-bearing within the dense alluvial deposits. The pile design for the foundations will consist of 12 or 14-inch square precast, prestressed concrete driven piles. The piles will be driven to a termination depth of at least 10 feet into the alluvium beneath the Young Bay Mud (YBM) to obtain optimum bearing capacity. Bearing capacity is determined relative to a factor of safety of 2.5. For purposes of preliminary design, the estimated pile length is 42 feet. Center-to-center pile spacing should be at least three diameters.

### ***STACKS***

The SCR system will be provided with a 12-foot diameter self-supporting steel stack, 140 feet tall. The stack will include the associated appurtenances, such as sampling ports, exterior ladders, side step, platforms, and electrical grounding.

Nonbuilding structures not covered by Sections 1634.3 and 1634.4 of the 1998 CBC shall be designed consistent with the requirements of Section 1634.5 and any other applicable provisions of Section 1634.

### ***BUILDINGS***

No permanent buildings will be erected for Phase I UGGPP. Control facilities will be situated in a temporary trailer.

### ***STORAGE TANKS***

A 4,000-gallon, standard horizontal cylindrical, atmospheric pressure API tank will be installed onsite for the storage of aqueous ammonia. A containment wall will be provided around the tank to contain the entire contents plus a freeboard allowance for rainfall or firewater accumulation. The tank will be supported on a slab-on-grade foundation, which in turn will be supported by at least 18 inches of compacted engineering fill. The recommended specifications for engineered fill are presented in the AFC (El Paso 2000a, AFC Section 3.5.10 and Appendix C).

Flat bottom tanks or other tanks with supported bottoms founded at or below grade shall be designed consistent with Section 1634.4 and any other applicable provisions of Section 1634 of the 1998 CBC.

## **SITE PREPARATION AND DEVELOPMENT**

### ***SITE PREPARATION***

Site preparation will consist of excavation and removal of the existing pavement sections, excavation of onsite earth materials to desired foundation grades or pavement sub-grades, and where required, over-excavation and replacement of any

loose compressible foundation soils. As proposed, no new areal fill is expected to be placed to raise the existing grade within the Phase I UGGPP site.

New slabs-on-grade and pavement sections constructed at the site should be supported on at least 18 inches of compacted engineering fill. The project engineer responsible for pavement design will confirm this requirement. This may require over-excavation of the existing fill materials. The exposed surface will be examined by a geotechnical engineer or his representative to determine whether additional over-excavation is required to remove any remaining unsuitable materials.

The soil surface exposed by the site preparation work will be scarified to a depth of at least 6 inches, water conditioned or allowed to dry to achieve a moisture content of about 2 percent above the optimum value, and compacted to at least 90 percent relative compaction as determined by Standard Test method ASTM D 1557.

### ***FOUNDATION EXCAVATION***

Excavations up to 4 to 6 feet may be required for the pile caps supporting the facilities. Excavation of the onsite fill will be accomplished with conventional equipment. The stability of the excavation will depend on the fill characteristics, depth to the YBM, groundwater control, and the duration of excavation. The need for stabilizing the excavation bottom will be evaluated at the time of construction.

### ***ENGINEERED FILL***

Placement of engineered fill will be needed to complete site preparation and to replace the over-excavated soft to loose soils. Onsite fill should be suitable for engineering fill provided that (1) it is free of organic matter, (2) it has a liquid limit less than 35 and a plasticity index less than 12, and (3) the maximum particle size is no greater than 4 inches. Available onsite materials should be blended, screened, or crushed to meet these requirements. Imported materials, if any, will also meet the above criteria. New fill will be placed and compacted on the prepared soil surface as described above.

Engineered fill will be placed in layers no greater than 8 inches in un-compacted thicknesses, conditioned with water or allowed to dry to achieve a moisture content that is about 2 percent above the optimum value, then compacted to at least 90 percent relative compaction. Laboratory compaction tests, per ASTM D 1557, will be performed at the time of grading to provide a proper basis for compaction control.

Staff has evaluated the proposed design criteria for grading, flood protection, erosion control, site drainage, and site access. Staff has assessed the criteria for designing and constructing linear support facilities such as a natural gas pipeline and electric transmission line. The applicant proposes to use accepted industry standards (see AFC Appendices C through G for a representative list of applicable industry standards), design practices, and construction methods in preparing and developing the site. Staff concludes that the project, including its linear facilities, will likely comply with all applicable site preparation LORS, and proposes Conditions of Certification (see below) to ensure compliance.

The major significant unavoidable impact primarily consists of seismic ground shaking and accompanying liquefaction. To mitigate the impacts for seismic shaking, the proposed plant components shall be designed in accordance with Zone 4 seismic design provisions of the 1998 edition California Building Code (CBC).

## MAJOR STRUCTURES, SYSTEMS AND EQUIPMENT

Major structures, systems and equipment are defined as those structures and associated components or equipment that are necessary for power production and are costly to repair or replace, that require a long lead time to repair or replace, or that are used for the storage, containment, or handling of hazardous or toxic materials. Major structures and equipment will be identified through compliance with proposed Condition of Certification **GEN-2** (below).

The AFC contains lists of the civil, structural, mechanical and electrical design criteria that demonstrate the likelihood of compliance with applicable LORS, and that staff believes are essential to ensuring that the project is designed in a manner that protects the environment and public health and safety (El Paso 2000a, AFC Appendices C, D, E and F).

The project shall be designed and constructed to the 1998 edition of the California Building Code (CBC), and other applicable codes and standards in effect at the time design and construction of the project actually commence. In the event the initial designs are submitted to the Chief Building Official (CBO)<sup>1</sup> for review and approval when the successor to the 1998 CBC is in effect, the 1998 CBC provisions, identified herein, shall be replaced with the applicable successor provisions.

Certain structures in a power plant may be required, under the CBC, to undergo dynamic lateral force (structural) analysis; others may be designed using the simpler static analysis procedure. In order to ensure that structures are analyzed using the appropriate lateral force procedure, staff has included Proposed Condition of Certification **STRUC-1** (below), which in part requires review and approval by the CBO of the project owner's proposed lateral force procedures prior to the start of construction.

## MECHANICAL SYSTEMS

The major features of the 51 MW power plant are listed in the condition of certification **GEN-2**. Other features of the project include: a temporary water treatment facility; pressure vessels, inlet air chillers, piping systems and pumps; aqueous ammonia storage, handling and piping system; air compressors; fire protection systems; and heating, ventilation, air conditioning (HVAC), potable water, plumbing and sanitary sewage systems.

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<sup>1</sup>The CBO is the CEC's duly appointed representative, who may be the City or County Chief Building Official, or other appointed representative.

## ***MECHANICAL LORS AND DESIGN CRITERIA***

The application lists and describes the mechanical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts (UGGPP 2000a, Appendix E). Design work will be performed in accordance with the appropriate LORS. This list indicates that the applicant is aware of the codes, standards, and design criteria appropriate for such a project. This approach will likely assure that the project's mechanical systems are designed to the appropriate codes and standards. Staff has proposed conditions of certification (**MECH-1** through **MECH-4**, below) to monitor compliance with this requirement.

## **ELECTRICAL DESIGN FEATURES**

The electrical system will be designed to support a simple cycle power plant utilizing a single combustion turbine generator set. The facility will supply electric energy to the PG&E service grid in the San Francisco peninsula corridor.

## ***ELECTRICAL LORS AND DESIGN CRITERIA***

The application lists and describes the electrical codes, standards and design criteria that will be employed in project design documents, procurement specifications and contracts (UGGPP 2000a, Appendix F). Design work will be performed in accordance with the appropriate LORS. This list indicates that the applicant is aware of the codes, standards, and design criteria appropriate for such a project. This approach will likely assure that the project's electrical systems are designed to the appropriate codes and standards. Staff has proposed conditions of certification (**ELEC-1** and **ELEC-2**, below) to monitor compliance with this requirement.

## ***NATURAL GAS PIPELINES***

Natural gas pipeline will be designed, constructed, installed, operated and maintained in accordance with U.S. Department of Transportation (DOT), Title 49, Code of Federal Regulations (CFR) Chapter 1, Part 192 "Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards", and the California Public Utilities Commission, General Order 112-E (CPUC GO 112-E).

Compliance with the requirements of CPUC GO 112-E will help mitigate the impacts of pipeline rupture by ensuring proper construction of the line, safe location of the line, and appropriate depth of burial. GO 112-E contains provisions for the design and construction of gas pipelines, which ensure that the pipelines can contain the pressures used. These provisions entail use of adequate wall thickness, proper weld design and welding procedures, corrosion protection, and automatic shutoff valves to shut off the gas in case of a rupture.

The requirements of the Occupational Safety and Health Act (OSHA), Subpart P, 29 CFR 1926.650, .651, and .652 shall be followed in the trenching and excavation for the gas pipeline and related facilities. A qualified engineer and an environmental specialist should monitor all field activities.

In order to meet the requirements of DOT-192 and CPUC GO-112E, the depth of cover for the pipeline shall be a minimum of three feet. After the pipeline has been backfilled, the line shall be hydrostatically tested in accordance with DOT Standards, per 49 CFR 192. Also, the applicant shall use the American Standard "Code for Gas Transmission and Distribution Piping Systems", ANSI B31.8, Chapter IV, Design, Installation and Testing as a recommended practice. Properly designed pipelines typically possess sufficient tensile strength that rupture of the pipeline because of stress due to shrinking and swelling imposed by expansive soils is unlikely. Therefore, no mitigation beyond a pipeline designed to applicable standards is necessary.

## **ANCILLARY FACILITIES**

### ***TRANSMISSION SYSTEM***

El Paso will be responsible for the maintenance, inspection and normal operation of the new service line in conjunction with the maintenance, inspection and normal operation of Phase I. All line operations will be in agreement with the connecting utility (PG&E) and ISO protocols.

### ***NATURAL GAS SUPPLY LINE (EXISTING)***

Phase I UGGPP will be fueled by an interconnection with the existing UCI natural gas supply line. The primary source of natural gas for the UCI facility is a large interstate pipeline owned by PG&E Gas Services. Only in-plant piping will be required. In-plant piping will be maintained in accordance with proper operating procedures. The piping will be constructed to meet all applicable codes.

### ***RAW WATER SUPPLY***

Phase I UGGPP will receive its raw water from United Airlines' Metal Removal Plant through an existing UCI water supply line. The pipeline is of sufficient size to supply both UCI and the Phase I UGGPP. Only in-plant piping will be required.

### ***EFFLUENT WATER DISCHARGE LINE***

The water effluent will be discharged to UCI. No new effluent pipeline will be required for the project.

## **PROJECT QUALITY PROCEDURES**

### ***DESIGN CRITERIA AND STANDARDS***

Each construction contractor will be required to develop a Quality Assurance/Quality Control (QA/QC) plan acceptable to the project owner prior to the start of project construction. In addition to the QA/QC plan, all equipment suppliers will be required to demonstrate that they meet applicable codes for the fabrication of the equipment.

Any QA/QC program will be developed to maximize confidence that systems and components will be designed, fabricated, stored, transported, installed, and tested in accordance with the technical codes and standards appropriate for a powerplant. Compliance with design requirements will be verified through an appropriate

program of inspections and audits. Employment of the QA/QC program will ensure that the project is designed, procured, fabricated and installed in accordance with all the applicable LORS.

## COMPLIANCE MONITORING

Under Section 104.2 of the CBC, the chief building official is authorized and directed to enforce all the provisions of the CBC. For all energy facilities certified by the Energy Commission, the Energy Commission is the chief building official and has the responsibility to enforce the code. In addition, the Energy Commission has the power to render interpretations of the CBC and to adopt and enforce rules and supplemental regulations to clarify the application of the CBC's provisions.

The Energy Commission's design review and construction inspection process is developed to conform to CBC requirements and ensure that all facility design Conditions of Certification are met. As provided by Section 104.2.2 of the CBC, the Energy Commission appoints experts to carry out the design review and construction inspections and act as delegate CBO on behalf of the Energy Commission. These delegate agents typically include the local chief building official and independent consultants hired to cover technical expertise not provided by the local official. The applicant, through permit fees as provided by CBC Sections 107.2 and 107.3, pays the costs of the reviews and inspections. While building permits in addition to the Energy Commission certification are not required for this project, in lieu permit fees are paid by the applicant consistent with CBC Section 107, to cover the costs of reviews and inspections.

Engineering and compliance staff will invite the local building authority, the City and County of San Francisco, to act as CBO for the project. When an entity has been identified to perform the duties of CBO, Energy Commission staff will complete a Memorandum of Understanding (MOU) with that entity that outlines its roles and responsibilities and those of its subcontractors and delegate agents.

Staff has developed proposed Conditions of Certification to ensure protection of the environment and public health and safety and compliance with engineering design LORS. Some of these conditions address the roles, responsibilities and qualifications of the applicant's engineers responsible for the design and construction of the project (proposed Conditions of Certification **GEN-1** through **GEN-8**). Engineers responsible for the design of the civil, structural, mechanical, and electrical portions of the project are required to be registered in California, and to sign and stamp each submittal of design plans, calculations, and specifications submitted to the CBO. These conditions require that no element of construction proceed without prior approval from the CBO. They also require that qualified special inspectors be assigned to perform or oversee special inspections required by the applicable LORS.

While the Energy Commission and delegate CBO have the authority to allow some flexibility in scheduling construction activities, these conditions are written to require that no element of construction of permanent facilities, which would be difficult to reverse or correct, may proceed without prior approval of plans by the CBO. For

those elements of construction that are not difficult to reverse and are allowed to proceed without approval of the plans, the applicant shall bear the responsibility to fully modify those elements of construction to comply with all design changes that result from the CBO's plan review and approval process.

## **FACILITY CLOSURE**

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The expected useful life of Phase I of the UGGPP is no more than 3 years. El Paso plans to submit an Application for Certification for a 570 MW combined cycle power plant that would replace the Phase I project. If the replacement project is certified by the Energy Commission, that certification decision will include all appropriate and necessary conditions for replacing the Phase I project and for the eventual closure of the replacement facility. If the replacement project is not certified, the Phase I facility must cease operation within three years and be permanently closed.

To ensure that the facility closure will be completed in a manner that both protects public health and safety, and is environmentally acceptable, the project owner shall submit a decommissioning plan to the CEC and the City and County of San Francisco, twelve months prior to its planned closure. The decommissioning plan shall include the following as a minimum:

1. Identification and discussion of the proposed decommissioning activities and schedule for the power plant and appurtenant facilities constructed as part of the project;
2. Identification of applicable laws, ordinances, regulations, and standards (LORS) in effect at the time;
3. Discussion of how the proposed decommissioning activities will comply with the identified LORS;
4. An analysis of decommissioning alternatives considered; and,
5. A discussion of the reasons for selecting the preferred decommissioning plans.

In the event of premature or unexpected cessation of operations, the plant shall continue to be staffed and maintained as necessary to protect public health and safety and to comply with all laws and regulations. If a decision is made to permanently close the facility and the decommissioning plan has not been completed and approved; interim steps shall be taken to reduce the required level of staffing and to begin preparatory decommissioning activities. These steps may include, at a minimum:

1. Installation of additional fencing and other increased security measures;
2. Removal and proper disposal of hazardous materials and wastes;
3. De-energizing of electrical systems not required for closure maintenance or decommissioning; and,
4. Draining and lay-up of equipment and systems to minimize corrosion and to preserve resale value.

The above requirements should serve as adequate protection, even in the unlikely event of project abandonment. Staff has proposed general conditions (see **General Conditions**) to ensure that these measures are included in the Facility Closure Plan.

## RESPONSE TO PUBLIC AND AGENCY COMMENTS

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As of December 6, 2000, staff has not received any public or agency comments in any of the facility design technical areas.

## CONCLUSIONS AND RECOMMENDATIONS

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### CONCLUSIONS

1. The laws, ordinances, regulations, and standards (LORS), identified in the AFC and supporting documents, are those applicable to the project.
2. Staff has evaluated the AFC, and the project engineering LORS and design criteria in the record. Staff concludes that the design, construction and eventual closure of the project are likely to comply with applicable engineering LORS.
3. The conditions of certification proposed will ensure that the proposed facilities are designed, constructed, operated, and eventually closed in accordance with applicable LORS. This will occur through the use of design review, plan checking and field inspections, which are to be performed by the local CBO or other commission delegate agent. Staff will audit the CBO to ensure satisfactory performance.
4. The Energy Commission design review and construction inspection process will be in place for the project and will allow construction to start as scheduled if the project is certified. The process will provide the necessary reviews to ensure compliance with applicable facility design LORS and conditions of certification.
5. Whereas future conditions that may affect decommissioning are largely unknown at this time, it can reasonably be concluded that if the project owner submits a decommissioning plan required by **GEN-9**, prior to the commencement of decommissioning, that the decommissioning procedure is likely to result in satisfactory decommissioning performance.

### RECOMMENDATIONS

Energy Commission staff recommends that:

1. The Conditions of Certification proposed herein be adopted to ensure that the project is designed and constructed to protect environmental quality, and assure public health and safety, and to ensure compliance with all applicable engineering LORS;



2. The project be designed and built to the 1998 CBC (or successor standard, if such is in effect when the initial project engineering designs are submitted for review); and
3. The CBO shall review the final designs, conduct plan checking and perform field inspections during construction, and Energy Commission staff shall audit and monitor the CBO to ensure satisfactory performance.

## CONDITIONS OF CERTIFICATION

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**GEN-1** The project owner shall design, construct and inspect the project in accordance with the 1998 California Building Code (CBC)<sup>2</sup> and all other applicable LORS in effect at the time initial design plans are submitted to the CBO for review and approval. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: In the event that the project design is submitted to the Chief Building Official (CBO)<sup>3</sup> when a successor to the 1998 CBC is in effect, the 1998 CBC provisions identified herein shall be replaced with the applicable successor provisions. *Where, in any specific case, different sections of the code specify different materials, methods of construction, or other requirements, the most restrictive shall govern.* Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall govern.

**Verification:** Within 30 days<sup>4</sup> after receipt of the Certificate of Occupancy, the project owner shall submit to the California Energy Commission Compliance Project Manager (CPM) a statement of verification, signed by the responsible design engineer, attesting that all designs, construction, installation and inspection requirements of the applicable LORS and the Energy Commission's Decision have been met in the area of facility design. The project owner shall provide the CPM a copy of the Certificate of Occupancy within 30 days of receipt from the CBO [1998 CBC, Section 109 – Certificate of Occupancy].

**GEN-2** The project owner shall furnish to the CPM and to the CBO a schedule of facility design submittals, a Master Drawing List, and a Master Specifications List. The schedule shall contain a description of, and a list of proposed

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<sup>2</sup> The Sections, Chapters, Appendices and Tables mentioned in these conditions of certification, unless otherwise stated, refer to the Sections, Chapters, Appendices and Tables of the 1998 California Building Code (CBC). The CBC in effect is that edition, which has been adopted by the California Building Standards Commission and published at least 180 days previously.

<sup>3</sup> The CBO is the CEC's duly appointed representative, who may be the City or County Chief Building Official, or other appointed representative.

<sup>4</sup> For all times specified in this chapter, except where specifically precluded, the project owner and CBO may mutually agree to a lesser or greater number of days.

submittal packages for design, calculations, and specifications for major structures and equipment (see a list of major structures and equipment in **Table 1: Major Equipment List** below). To facilitate audits by Energy Commission staff, the project owner shall provide designated packages to the CPM when requested.

**Table 1**  
**Major Equipment List**

Equipment/System	Qty	Size/Capacity	Service/Remarks
Combustion Turbine Generators	1	LM 6000 SPT	Water injection, sprint boost, inlet spray mist
Aqueous Ammonia Storage Tank	1	4,000 gal	19 wt % ammonia solution for NO <sub>x</sub> control
SCR System including Ammonia Injection Package	1	NO <sub>x</sub> reduction	NO <sub>x</sub> control
Oxidation Catalyst	1	CO reduction	VOC and CO control
NO <sub>x</sub> and Sprint water injection Packages	1	50 gpm	DI water injection system (both NO <sub>x</sub> and Sprint)
Fuel Gas Filter Separator	1	7,200 SCFM	Natural gas fuel (LM6000)
Fuel Gas Compressor	1	7,200 SCFM	475 psi discharge
Fin Fan Cooler for LM6000	1	0.20 MMBTUH	Lube oil cooling (one 100% capacity)
SCR Exhaust Stack	1	12' dia. 140' high	
Continuous Emissions Monitoring System (CEMS)	1	NO <sub>x</sub> , CO, and O <sub>2</sub>	SCR Stack

**\*All capacities and sizes are approximate and may change during project final design.**

**Verification:** At least sixty (60) days prior to the start of grading, the project owner shall submit the schedule, a Master Drawing List, and a Master Specifications List to the CBO and to the CPM. The project owner shall provide schedule updates in the Monthly Compliance Report.

**GEN-3** The project owner shall make payments to the CBO for design review, plan check and construction inspection, equivalent to the fees listed in the 1998 CBC, Chapter 1, Section 107 and Table 1-A, Building Permit Fees; Appendix Chapter 33, Section 3310 and Table A-33-A, Grading Plan Review Fees; and Table A-33-B, Grading Permit Fees. If the City and County of San Francisco has adjusted the CBC fees for design review, plan check and construction inspection, the project owner shall pay the adjusted fees.

**Verification:** The project owner shall make the required payments to the CBO at the time of submittal of the plans, design calculations, specifications, or soil reports. The project owner shall send a copy of the CBO's receipt of payment to the CPM in the next Monthly Compliance Report indicating that the applicable fees have been paid.

**GEN-4** Prior to the start of grading, the project owner shall assign a California registered architect, structural engineer or civil engineer, as a resident

engineer (RE), to be in general responsible charge of the project [Building Standards Administrative Code (Cal. Code Regs., tit. 24, § 4-209, Designation of Responsibilities)]. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

Protocol: The RE may delegate responsibility for portions of the project to other registered engineers. Registered mechanical and electrical engineers may be delegated responsibility for mechanical and electrical portions of the project respectively. A project may be divided into parts, provided each part is clearly defined as a distinct unit. Separate assignment of general responsible charge may be made for each designated part.

The RE shall:

1. Monitor construction progress to ensure compliance with LORS;
2. Ensure that construction of all the facilities conforms in every material respect to the applicable LORS, these Conditions of Certification, approved plans, and specifications;
3. Prepare documents to initiate changes in the approved drawings and specifications when directed by the project owner or as required by conditions on the project;
4. Be responsible for providing the project inspectors and testing agency(ies) with complete and up-to-date set(s) of stamped drawings, plans, specifications and any other required documents;
5. Be responsible for the timely submittal of construction progress reports to the CBO from the project inspectors, the contractor, and other engineers who have been delegated responsibility for portions of the project; and
6. Be responsible for notifying the CBO of corrective action or the disposition of items noted on laboratory reports or other tests as not conforming to the approved plans and specifications.

The RE shall have the authority to halt construction and to require changes or remedial work, if the work does not conform to applicable requirements.

If the RE or the delegated engineers are reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

**Verification:** At least thirty (30) days prior to the start of grading, the project owner shall submit to the CBO for review and approval, the name, qualifications and registration number of the RE and any other delegated engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the RE and other delegated engineer(s) within five days of the approval.

If the RE or the delegated engineer(s) are subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

**GEN-5** Prior to the start of grading, the project owner shall assign at least one of each of the following California registered engineers to the project: A) a civil engineer; B) a geotechnical engineer or a civil engineer experienced and knowledgeable in the practice of soils engineering; C) a design engineer, who is either a structural engineer or a civil engineer fully competent and proficient in the design of powerplant structures and equipment supports; D) a mechanical engineer; and E) an electrical engineer. [California Business and Professions Code section 6704 et seq., and sections 6730 and 6736, require state registration to practice as a civil engineer or structural engineer in California.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

The tasks performed by the civil, mechanical, electrical or design engineers may be divided between two or more engineers, as long as each engineer is responsible for a particular segment of the project (e.g., proposed earthwork, civil structures, powerplant structures, equipment support). No segment of the project shall have more than one responsible engineer. The transmission line may be the responsibility of a separate California registered electrical engineer.

The project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all engineers assigned to the project. [1998 CBC, Section 104.2, Powers and Duties of Building Official].

If any one of the designated engineers is subsequently reassigned or replaced, the project owner shall submit the name, qualifications and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer.

Protocol: A: The civil engineer shall:

1. Design, or be responsible for design, stamp, and sign all plans, calculations, and specifications for proposed site work, civil works, and related facilities. At a minimum, these include: grading, site preparation, excavation, compaction, construction of secondary containment, foundations, erosion and sedimentation control structures, drainage facilities, underground utilities, culverts, site access roads, and sanitary sewer systems; and

2. Provide consultation to the RE during the construction phase of the project, and recommend changes in the design of the civil works facilities and changes in the construction procedures.

Protocol: B: The geotechnical engineer or civil engineer, experienced and knowledgeable in the practice of soils engineering, shall:

1. Review all the engineering geology reports, and prepare final soils grading report;
2. Prepare the soils engineering reports required by the 1998 CBC, Appendix Chapter 33, Section 3309.5 – Soils Engineering Report, and Section 3309.6 – Engineering Geology Report;
3. Be present, as required, during site grading and earthwork to provide consultation and monitor compliance with the requirements set forth in the 1998 CBC, Appendix Chapter 33, section 3317, Grading Inspections;
4. Recommend field changes to the civil engineer and RE;
5. Review the geotechnical report, field exploration report, laboratory tests, and engineering analyses detailing the nature and extent of the site soils that may be susceptible to liquefaction, rapid settlement or collapse when saturated under load; and
6. Prepare reports on foundation investigation to comply with the 1998 CBC, Chapter 18 section 1804, Foundation Investigations.

This engineer shall be authorized to halt earthwork and to require changes; if site conditions are unsafe or do not conform with predicted conditions used as a basis for design of earthwork or foundations. [1998 CBC, section 104.2.4, Stop orders.]

Protocol: C: The design engineer shall:

1. Be directly responsible for the design of the proposed structures and equipment supports;
2. Provide consultation to the RE during design and construction of the project;
3. Monitor construction progress to ensure compliance with LORS;
4. Evaluate and recommend necessary changes in design; and
5. Prepare and sign all major building plans, specifications and calculations.

Protocol: D: The mechanical engineer shall be responsible for, and sign and stamp a statement with, each mechanical submittal to the CBO, stating that the proposed final design plans, specifications, and calculations conform with all of the mechanical engineering design requirements set forth in the Energy Commission's Decision.

Protocol: E: The electrical engineer shall:

1. Be responsible for the electrical design of the project; and
2. Sign and stamp electrical design drawings, plans, specifications, and calculations.

**Verification:** At least thirty (30) days prior to the start of grading, the project owner shall submit to the CBO for review and approval, the names, qualifications and registration numbers of all the responsible engineers assigned to the project. The project owner shall notify the CPM of the CBO's approvals of the engineers within five days of the approval.

If the designated responsible engineer is subsequently reassigned or replaced, the project owner has five days in which to submit the name, qualifications, and registration number of the newly assigned engineer to the CBO for review and approval. The project owner shall notify the CPM of the CBO's approval of the new engineer within five days of the approval.

**GEN-6** Prior to the start of an activity requiring special inspection, the project owner shall assign to the project, a qualified and certified special inspector(s) who shall be responsible for the special inspections required by the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section, 1701.5 Type of Work (requiring special inspection), and Section 106.3.5, Inspection and observation program. All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

**Protocol:** The special inspector shall:

1. Be a qualified person who shall demonstrate competence, to the satisfaction of the CBO, for inspection of the particular type of construction requiring special or continuous inspection;
2. Observe the work assigned for conformance with the approved design drawings and specifications;
3. Furnish inspection reports to the CBO and RE. All discrepancies shall be brought to the immediate attention of the RE for correction, then, if uncorrected, to the CBO and the CPM for corrective action; and
4. Submit a final signed report to the RE, CBO, and CPM, stating whether the work requiring special inspection was, to the best of the inspector's knowledge, in conformance with the approved plans and specifications and the applicable provisions of the applicable edition of the CBC.

A certified weld inspector, certified by the American Welding Society (AWS), and/or American Society of Mechanical Engineers (ASME) as applicable, shall inspect welding performed on-site requiring special inspection (including structural, piping, tanks and pressure vessels).

**Verification:** At least 15 days prior to the start of an activity requiring special inspection, the project owner shall submit to the CBO for review and approval, with a copy to the CPM, the name(s) and qualifications of the certified weld inspector(s), or other certified special inspector(s) assigned to the project to perform one or more of the duties set forth above. The project owner shall also submit to the CPM a copy of the CBO's approval of the qualifications of all special inspectors in the next Monthly Compliance Report.

If the special inspector is subsequently reassigned or replaced, the project owner has five days in which to submit the name and qualifications of the newly assigned special inspector to the CBO for approval. The project owner shall notify the CPM of the CBO's approval of the newly assigned inspector within five days of the approval.

**GEN-7** The project owner shall keep the CBO informed regarding the status of engineering and construction. If any discrepancy in design and/or construction is discovered, the project owner shall document the discrepancy and recommend the corrective action required. The discrepancy documentation shall be submitted to the CBO for review and approval. The discrepancy documentation shall reference this condition of certification and, if appropriate, the applicable sections of the CBC and/or other LORS.

**Verification:** The project owner shall submit monthly construction progress reports to the CBO and CPM. The project owner shall transmit a copy of the CBO's approval or disapproval of any corrective action taken to resolve a discrepancy to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, the reason for disapproval, and the revised corrective action to obtain CBO's approval.

**GEN-8** The project owner shall obtain the CBO's final approval of all completed work. The project owner shall request the CBO to inspect the completed structure and review the submitted documents. When the work and the "as-built" and "as graded" plans conform to the approved final plans, the project owner shall notify the CPM regarding the CBO's final approval. The marked up "as-built" drawings for the construction of structural and architectural work shall be submitted to the CBO. Changes approved by the CBO shall be identified on the "as-built" drawings [1998 CBC, Section 108, Inspections].

**Verification:** Within 15 days of the completion of any work, the project owner shall submit to the CBO, with a copy to the CPM, (a) a written notice that the completed work is ready for final inspection, and (b) a signed statement that the work conforms to the final approved plans.

**GEN-9** The project owner shall file a closure/decommissioning plan with the San Francisco Airport Commission and the CPM for review and approval at least 12 months (or other mutually agreed to time) prior to commencing the

closure activities. If the project is abandoned before construction is completed, the project owner shall return the site to its original condition.

**Protocol:** The closure plan shall include a discussion of the following:

1. The proposed closure/decommissioning activities for the project and all appurtenant facilities constructed as part of the project;
2. All applicable LORS, all local/regional plans, and a discussion of the conformance of the proposed decommissioning activities to the applicable LORS and local/regional plans;
3. Activities necessary to restore the site if the decommissioning plan requires removal of all equipment and appurtenant facilities; and
4. Closure/decommissioning alternatives, other than complete restoration of the site.

**Verification:** At least 12 months prior to closure or decommissioning activities, the project owner shall file a copy of the closure/decommissioning plan with the San Francisco Airport Commission and the CPM for review and approval. Prior to the submittal of the closure plan, a meeting shall be held between the project owner and the CPM for discussing the specific contents of the plan.

**CIVIL-1** Prior to the start of site grading, the project owner shall submit to the CBO for review and approval the following:

1. Design of the proposed drainage structures and the grading plan;
2. An erosion and sedimentation control plan;
3. Related calculations and specifications, signed and stamped by the responsible civil engineer; and
4. Soils report as required by the 1998 CBC, Appendix Chapter 33, Section 3309.5, Soils Engineering Report and Section 3309.6, Engineering Geology Report.

**Verification:** At least 15 days prior to the start of site grading, the project owner shall submit the documents described above to the CBO for review and approval. In the next Monthly Compliance Report following the CBO's approval, the project owner shall submit a written statement certifying that the documents have been approved by the CBO.

**CIVIL-2** The resident engineer shall, if appropriate, stop all earthwork and construction in the affected areas when the responsible geotechnical engineer or civil engineer experienced and knowledgeable in the practice of soils engineering identifies unforeseen adverse soil or geologic conditions. The project owner shall submit modified plans, specifications and calculations to the CBO based on these new conditions. The project owner



shall obtain approval from the CBO before resuming earthwork and construction in the affected area. [1998 CBC, Section 104.2.4, Stop orders].

**Verification:** The project owner shall notify the CPM, within five days, when earthwork and construction is stopped as a result of unforeseen adverse geologic/soil conditions. Within five days of the CBO's approval, the project owner shall provide to the CPM a copy of the CBO's approval to resume earthwork and construction in the affected areas.

**CIVIL-3** The project owner shall perform inspections in accordance with the 1998 CBC, Chapter 1, Section 108, Inspections; Chapter 17, Section 1701.6, Continuous and Periodic Special Inspection; and Appendix Chapter 33, Section 3317, Grading Inspection. All plant site-grading operations shall be subject to inspection by the CBO and the CPM.

**Protocol:** If, in the course of inspection, it is discovered that the work is not being done in accordance with the approved plans, the discrepancies shall be reported immediately to the resident engineer, the CBO, and the CPM. The project owner shall prepare a written report detailing all discrepancies and non-compliance items, and the proposed corrective action, and send copies to the CBO and the CPM.

**Verification:** Within five days of the discovery of any discrepancies, the resident engineer shall transmit to the CBO and the CPM a Non-Conformance Report (NCR), and the proposed corrective action. Within five days of resolution of the NCR, the project owner shall submit the details of the corrective action to the CBO and the CPM. A list of NCRs, for the reporting month, shall also be included in the following Monthly Compliance Report.

**CIVIL-4** After completion of finished grading and erosion and sedimentation control and drainage facilities, the project owner shall obtain the CBO's approval of the final "as-graded" grading plans, and final "as-built" plans for the erosion and sedimentation control facilities [1998 CBC, Section 109, Certificate of Occupancy].

**Verification:** Within 30 days of the completion of the erosion and sediment control mitigation and drainage facilities, the project owner shall submit to the CBO the responsible civil engineer's signed statement that the installation of the facilities and all erosion control measures were completed in accordance with the final approved combined grading plans, and that the facilities are adequate for their intended purposes. The project owner shall submit a copy of this report to the CPM in the next Monthly Compliance Report.

**CIVIL-5** The project owner shall design and install the natural gas pipeline in accordance with the appropriate U.S. Department of Transportation (DOT), Title 49, Code of Federal Regulations (CFR) Chapter 1, Part 192

“Transportation of Natural and other Gas by Pipeline: Minimum Federal Safety Standards”, and the California Public Utilities Commission, General Order 112-E (CPUC GO 112-E). Prior to the start of any increment of pipeline construction, the project owner shall obtain CBO approval of the proposed final design drawings, specifications, calculations, and applicable quality control procedures.

**Protocol:** The project owner shall ensure that:

1. The responsible engineer, registered to practice civil engineering in the State of California, shall submit a signed and stamped statement to the CBO that the proposed final designs, plans, specifications, and calculations conform with all of the piping requirements set forth in the Commission decision.
2. The depth of cover for the pipeline shall meet the requirements of the applicable DOT-192 and CPUC G.O.-112E, as necessary.
3. Upon completion of construction, the project owner shall request the CBO's inspection approval of said construction.

**Verification:** Thirty (30) days prior to the start of pipeline construction, the project owner shall submit to the CBO for review and approval, the final design plans, specifications, calculations and quality control procedures for the natural gas pipeline construction. The project owner shall include a copy of the signed and stamped engineer's certification of conformance with the applicable requirements. The project owner shall submit to the CPM a copy of the signed and stamped engineer's certification of compliance with applicable LORS and standards in the Monthly Compliance Report following submittal of same to the CBO. The project owner shall submit to the CPM a copy of the CBO's inspection approvals in the Monthly Compliance Report following completion of construction inspection.

**STRUC-1** Prior to the start of any increment of construction, the project owner shall submit to the CBO for review and approval the proposed lateral force procedures for project structures and the applicable designs, plans and drawings for project structures. Proposed lateral force procedures, designs, plans and drawings shall be those for:

1. Major project structures;
2. Major foundations, equipment supports and anchorage;
3. Large field fabricated tanks; and
4. Turbine/generator pedestal.

In addition, the project owner shall, prior to the start of any increment of construction, get approval from the CBO of the lateral force procedures proposed for project structures to comply with the lateral force provisions of the CBC.

**Protocol:** The project owner shall:

1. Obtain approval from the CBO of lateral force procedures proposed for project structures;
2. Obtain approval from the CBO for the final design plans, specifications, calculations, soils reports, and applicable quality control procedures. If there are conflicting requirements, the more stringent shall govern (i.e., highest loads, or lowest allowable stresses shall govern). All plans, calculations, and specifications for foundations that support structures shall be filed concurrently with the structure plans, calculations, and specifications [1998 CBC, Section 108.4, Approval Required];
3. Submit to the CBO the required number of copies of the structural plans, specifications, calculations, and other required documents of the designated major structures at least 90 days (or a lesser number of days mutually agreed to by the project owner and the CBO), prior to the start of on-site fabrication and installation of each structure, equipment support, or foundation [1998 CBC, Section 106.4.2, Retention of plans and Section 106.3.2, Submittal documents.]; and
4. Ensure that the final plans, calculations, and specifications clearly reflect the inclusion of approved criteria, assumptions, and methods used to develop the design. The final designs, plans, calculations and specifications shall be signed and stamped by the responsible design engineer [1998 CBC, Section 106.3.4, Architect or Engineer of Record].

**Verification:** At least thirty (30) days prior to the start of any increment of construction, the project owner shall submit to the CBO, with a copy to the CPM, the responsible design engineer's signed statement that the final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

The project owner shall submit to the CPM a copy of a statement from the CBO that the proposed structural plans, specifications, and calculations have been approved and are in conformance with the requirements set forth in the applicable LORS.

**STRUC-2** The project owner shall submit to the CBO the required number of sets of the following:

1. Concrete cylinder strength test reports (including date of testing, date sample taken, design concrete strength, tested cylinder strength, age of test, type and size of sample, location and quantity of concrete placement from which sample was taken, and mix design designation and parameters);
2. Concrete pour sign-off sheets;
3. Bolt torque inspection reports (including location of test, date, bolt size, and recorded torques);
4. Field weld inspection reports (including type of weld, location of weld, inspection of non-destructive testing (NDT) procedure and results, welder

qualifications, certifications, qualified procedure description or number (ref: AWS); and

5. Reports covering other structure activities requiring special inspections shall be in accordance with the 1998 CBC, Chapter 17, Section 1701, Special Inspections, Section 1701.5, Type of Work (requiring special inspection), Section 1702, Structural Observation and Section 1703, Nondestructive Testing.

**Verification:** If a discrepancy is discovered in any of the above data, the project owner shall, within five days, prepare and submit an NCR describing the nature of the discrepancies to the CBO, with a copy of the transmittal letter to the CPM. The NCR shall reference the condition(s) of certification and the applicable CBC chapter and section. Within five days of resolution of the NCR, the project owner shall submit a copy of the corrective action to the CBO and the CPM.

The project owner shall transmit a copy of the CBO's approval or disapproval of the corrective action to the CPM within 15 days. If disapproved, the project owner shall advise the CPM, within five days, of the reason for disapproval, and submit the revised corrective action for the CBO's approval.

**STRUC-3** The project owner shall submit to the CBO design changes to the final plans required by the 1998 CBC, Chapter 1, Section 106.3.2, Submittal documents, and Section 106.3.3, Information on plans and specifications, including the revised drawings, specifications, calculations, and a complete description of, and supporting rationale for, the proposed changes, and shall give the CBO prior notice of the intended filing.

**Verification:** On a schedule suitable to the CBO, the project owner shall notify the CBO of the intended filing of design changes, and shall submit the required number of sets of revised drawings and the required number of copies of the other above-mentioned documents to the CBO, with a copy of the transmittal letter to the CPM. The project owner shall notify the CPM, via the Monthly Compliance Report, when the CBO has approved the revised plans.

**STRUC-4** Tanks and vessels containing quantities of toxic or hazardous materials exceeding amounts specified in Chapter 3, Table 3-E of the 1998 CBC shall, at a minimum, be designed to comply with Occupancy Category 2 of the 1998 CBC. Chapter 16, Table 16-K of the 1998 CBC requires use of the following seismic design criteria:  $I = 1.25$ ,  $I_p = 1.5$  and  $I_w = 1.15$ .

**Verification:** At least thirty (30) days prior to the start of installation of the tanks or vessels containing the above specified quantities of highly toxic or explosive substances that would be hazardous to the safety of the general public if released, the project owner shall submit to the CBO for review and approval, final design plans, specifications, and calculations, including a copy of the signed and stamped engineer's certification.

The project owner shall send copies of the CBO design approvals to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

**MECH-1** Prior to the start of any increment of piping construction, the project owner shall submit, for CBO review and approval, the proposed final design drawings, specifications and calculations for each plant piping system (excluding domestic water, refrigeration systems, and small bore piping, i.e., piping and tubing with a diameter less than two and one-half inches). The submittal shall also include the applicable QA/QC procedures. The project owner shall design and install all piping, other than domestic water, refrigeration, and small bore piping in accordance with the applicable edition of the CBC. Upon completion of construction of any piping system, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 106.3.2, Submittal documents, Section 108.3, Inspection Requests].

Protocol: The responsible mechanical engineer shall submit a signed and stamped statement to the CBO when:

1. The proposed final design plans, specifications and calculations conform with all of the piping requirements set forth in the Energy Commission's Decision; and
2. All of the other piping systems, except domestic water, refrigeration systems and small bore piping have been designed, fabricated and installed in accordance with all applicable ordinances, regulations, laws and industry standards, including, as applicable:
  - American National Standards Institute (ANSI) B31.1 (Power Piping Code);
  - ANSI B31.2 (Fuel Gas Piping Code);
  - ANSI B31.3 (Chemical Plant and Petroleum Refinery Piping Code);
  - ANSI B31.8 (Gas Transmission and Distribution Piping Code); and
  - Specific City/County code.

The CBO may require the project owner to employ special inspectors to report directly to the CBO to monitor shop fabrication or equipment installation [1998 CBC, Section 104.2.2, Deputies].

Verification: At least thirty (30) days prior to the start of any increment of piping construction, the project owner shall submit to the CBO for approval, with a copy of the transmittal letter to the CPM, the above listed documents for that increment of construction of piping systems, including a copy of the signed and stamped engineer's certification of conformance with the Energy Commission's Decision.

The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

**MECH-2** For all pressure vessels installed in the plant, the project owner shall submit to the CBO and California Occupational Safety and Health Administration (Cal-OSHA), prior to operation, the code certification papers and other documents required by the applicable LORS. Upon completion of the installation of any pressure vessel, the project owner shall request the appropriate CBO and/or Cal-OSHA inspection of said installation [1998 CBC, Section 108.3 – Inspection Requests].

The project owner shall:

1. Ensure that all boilers and fired and unfired pressure vessels are designed, fabricated and installed in accordance with the appropriate section of the American Society of Mechanical Engineers (ASME) Boiler and Pressure Vessel Code, or other applicable code. Vendor certification, with identification of applicable code, shall be submitted for prefabricated vessels and tanks; and
2. Have the responsible design engineer submit a statement to the CBO that the proposed final design plans, specifications and calculations conform to all of the requirements set forth in the appropriate ASME Boiler and Pressure Vessel Code or other applicable codes.

**Verification:** At least thirty (30) days prior to the start of on-site fabrication or installation of any pressure vessel, the project owner shall submit to the CBO for review and approval, final design plans, specifications and calculations, including a copy of the signed and stamped engineer's certification, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of the CBO design approvals to the CPM in the following Monthly Compliance Report. The project owner shall also transmit a copy of the CBO's and/or Cal-OSHA inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

**MECH-3** Prior to the start of construction of any heating, ventilating, air conditioning (HVAC) or refrigeration system, the project owner shall submit to the CBO for review and approval the design plans, specifications, calculations and quality control procedures for that system. Packaged HVAC systems, where used, shall be identified with the appropriate manufacturer's data sheets.

**Protocol:** The project owner shall design and install all HVAC and refrigeration systems within buildings and related structures in accordance with the applicable edition of the CBC. Upon completion of any increment of construction, the project owner shall request the CBO's inspection and approval of said construction. The final plans, specifications and calculations shall include approved criteria, assumptions and methods used to develop

the design. In addition, the responsible mechanical engineer shall sign and stamp all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with the applicable LORS [1998 CBC, Section 108.7, Other Inspections; Section 106.3.4, Architect or Engineer of Record].

**Verification:** At least thirty (30) days prior to the start of construction of any HVAC or refrigeration system, the project owner shall submit to the CBO the required HVAC and refrigeration calculations, plans and specifications, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, with a copy of the transmittal letter to the CPM.

The project owner shall send copies of CBO comments and approvals to the CPM in the next Monthly Compliance Report. The project owner shall transmit a copy of the CBO's inspection approvals to the CPM in the Monthly Compliance Report following completion of any inspection.

**MECH-4** Prior to the start of each increment of plumbing construction, the project owner shall submit for CBO's approval the final design plans, specifications, calculations, and QA/QC procedures for all plumbing systems, potable water systems, drainage systems (including sanitary drain and waste), toilet rooms, building energy conservation systems, and temperature control and ventilation systems, including water and sewer connection permits issued by the local agency. Upon completion of any increment of construction, the project owner shall request the CBO's inspection approval of said construction [1998 CBC, Section 108.3, Inspection Requests, Section 108.4, Approval Required].

**Protocol:** The project owner shall design, fabricate and install:

1. Plumbing, potable water, all drainage systems, and toilet rooms in accordance with Title 24, California Code of Regulations, Division 5, Part 5 and the California Plumbing Code (or other relevant section(s) of the currently adopted California Plumbing Code and Title 24, California Code of Regulations); and
2. Building energy conservation systems and temperature control and ventilation systems in accordance with Title 24, California Code of Regulations, Division 5, Chapter 2-53, Part 2.

The final plans, specifications and calculations shall clearly reflect the inclusion of approved criteria, assumptions and methods used to develop the design. In addition, the responsible mechanical engineer shall stamp and sign all plans, drawings and calculations and submit a signed statement to the CBO that the proposed final design plans, specifications and calculations conform with all of the requirements set forth in the Energy Commission's Decision.

**Verification:** At least thirty (30) days prior to the start of construction of any of the above systems, the project owner shall submit to the CBO the final design plans, specifications and calculations, including a copy of the signed and stamped statement from the responsible mechanical engineer certifying compliance with the applicable edition of the CBC, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

The project owner shall transmit a copy of the CBO's inspection approval to the CPM in the next Monthly Compliance Report following completion of that increment of construction.

**ELEC-1** For the 480 volts and higher systems, the project owner shall not begin any increment of electrical construction until plans for that increment have been approved by the CBO. These plans, together with design changes and design change notices, shall remain on the site for one year after completion of construction. The project owner shall request that the CBO inspect the installation to ensure compliance with the requirements of applicable LORS [1998 CBC, Section 108.4, Approval Required, and Section 108.3, Inspection Requests.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

**Protocol:** The following activities shall be reported in the Monthly Compliance Report:

1. receipt or delay of major electrical equipment;
2. testing or energization of major electrical equipment; and
3. the number of electrical drawings approved, submitted for approval, and still to be submitted.

**Verification:** At least thirty (30) days prior to the start of each increment of electrical construction, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations for electrical equipment and systems 480 volts and greater, including a copy of the signed and stamped statement from the responsible electrical engineer attesting compliance with the applicable LORS, and send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

**ELEC-2** The project owner shall submit to the CBO the required number of copies of items A and B for review and approval and one copy of item C [CBC 1998, Section 106.3.2, Submittal documents.] All transmission facilities (lines, switchyards, switching stations, and substations) are handled in Conditions of Certification TSE-1, TSE-2 and TSE-3 in the **Transmission System Engineering** Section of this document.

**Protocol:** A. Final plant design plans to include:

1. one-line diagrams for the 13.8 kV, 4.16 kV and 480 V systems;



2. system grounding drawings;
3. general arrangement or conduit drawings; and
3. their plans as required by the CBO.

Protocol: B. Final plant calculations to establish:

1. short-circuit ratings of plant equipment;
2. ampacity of feeder cables;
3. voltage drop in feeder cables;
4. system grounding requirements;
5. coordination study calculations for fuses, circuit breakers and protective relay settings for the 13.8 kV, 4.16 kV and 480 V systems;
6. system grounding requirements;
7. lighting energy calculations; and
8. other reasonable calculations as customarily required by the CBO.

Protocol: C. A signed statement by the registered electrical engineer certifying that the proposed final design plans and specifications conform to requirements set forth in the Energy Commission Decision.

**Verification:** At least thirty (30) days prior to the start of each increment of electrical equipment installation, the project owner shall submit to the CBO for review and approval the final design plans, specifications and calculations, for electrical equipment and systems 480 volts and greater enumerated above, including a copy of the signed and stamped statement from the responsible electrical engineer certifying compliance with the applicable LORS. The project owner shall send the CPM a copy of the transmittal letter in the next Monthly Compliance Report.

## REFERENCES

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- El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.
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- California Energy Commission (CEC). 2000a. CEC data requests, data requests #1 – 90 filed on November 8, 2000.
- California Energy Commission (CEC). 2000b. Issue Identification Report -- United Golden Gate Power Project, Phase I, filed on November 13, 2000.
- County of San Mateo, Department of Public Works (San Mateo County/Lee). 2000. Phase I of the United Golden Gate Power Plant Project. Filed with the California Energy Commission on November 1, 2000.
- WZI Inc. (WZI/Weaver). 2000a. United Golden Gate Power Project LLC -- Phase I, Application for Authority to Construct. Filed with the California Energy Commission, October 13, 2000.
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# POWER PLANT RELIABILITY

Testimony of Steve Baker

## INTRODUCTION

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In this analysis, Energy Commission staff addresses the reliability issues of the project to determine if the power plant is likely to be built in accordance with typical industry norms for reliability of power generation. Staff uses this level of reliability as a benchmark because the resulting project would likely not degrade the overall reliability of the electric system it serves (see **Setting** below).

The scope of this power plant reliability analysis covers:

- equipment availability;
- plant maintainability;
- fuel and water availability; and
- power plant reliability in relation to natural hazards.

Staff examined the project design criteria to determine if the project is likely to be built in accordance with typical industry norms for reliability of power generation. While El Paso Merchant Energy Company (El Paso) has predicted a level of reliability for the power plant (see below), staff believes El Paso should not be held responsible for achieving this goal, so long as the plant's reliability matches or exceeds that of similar plants.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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Presently, there are no laws, ordinances, regulations or standards (LORS) that establish either power plant reliability criteria or procedures for attaining reliable operation. However, the commission must make findings as to the manner in which the project is to be designed, sited and operated to ensure safe and reliable operation (Cal. Code Regs., tit. 20, § 1752(c)). Staff takes the approach that a project is acceptable if it does not degrade the reliability of the utility system to which it is connected. This is likely the case if the project exhibits reliability at least equal to that of other power plants on that system (see **Setting** below).

## SETTING

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In the regulated monopoly electric industry of past decades, the utility companies assured overall system reliability, in part, by maintaining a "reserve margin." This amounted to having on call, at all times, sufficient generating capacity, in the form of standby power plants, to quickly handle unexpected outages of generating or transmission facilities. The utilities generally maintained a seven- to ten-percent reserve margin, meaning that sufficient capacity was on call to quickly replace from seven to ten percent of total system resources. This margin proved adequate, in part because of the reliability of the power plants that constituted the system.

Now, in the newly restructured competitive electric power industry, the responsibility for maintaining system reliability falls largely to the California Independent System Operator (Cal-ISO), which works with the California Power Exchange (PX) to purchase, dispatch and sell electric power throughout the state. How Cal-ISO will ensure system reliability is currently being determined; protocols are being employed that will, it is anticipated, allow sufficient reliability to be maintained under the competitive market system. "Must-run" power purchase agreements and "participating generator" agreements are two mechanisms being employed to ensure an adequate supply of reliable power (Mavis 1998, pers. comm.).

The Cal-ISO also requires those power plants selling ancillary services, as well as those holding reliability must-run contracts, to fulfill certain requirements, including:

- filing periodic reports on plant reliability;
- reporting all outages and their causes; and
- scheduling all planned maintenance outages with the Cal-ISO (Detmers 1999, pers. comm.).

The Cal-ISO's mechanisms to ensure adequate power plant reliability apparently are being devised under the assumption that the individual power plants that compete to sell power into the system will each exhibit a level of reliability similar to that of power plants of past decades. However, there is cause to believe that, under free market competition, financial pressures on power plant owners to minimize capital outlays and maintenance expenditures may act to reduce the reliability of many power plants, both existing and newly constructed (McGraw-Hill 1994). It is possible that, if significant numbers of power plants exhibit individual reliability sufficiently lower than this historical level, the assumptions used by Cal-ISO to ensure system reliability will prove invalid, with potentially disappointing results. Until the restructured competitive electric power system has undergone a shakeout period, and the effects of varying power plant reliability are understood and compensated for, staff deems it wise to encourage power plant owners to continue to build and operate their projects to the level of reliability to which all in the industry are accustomed.

El Paso proposes to operate the (nominal) 50 MW United Golden Gate Power Project, Phase I (UGGPP) as a simple cycle peaking power plant, selling peaking power on the market during peak demand periods and providing black start capability (El Paso 2000a, AFC §§ 1.1, 3.4, 3.4.2, 3.9.1.2, 4.3.3). The project is expected to operate at a high annual availability factor during roughly 500 hours per year of dispatch during the summer season, and will be available beyond 500 hours during the rest of the year (El Paso 2000a, AFC §§ 4.3.1.2.1, 4.3.1.3).

## ANALYSIS

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A reliable power plant is one that is available when called upon to operate. Throughout its intended life, the UGGPP will be expected to perform reliably in peaking duty. Peaking power plant systems must be able to operate for only a few hours per day without shutting down for maintenance or repairs. The plant will be

shut down every night, on weekends, and in the fall, winter and spring, allowing time for maintenance and repairs. Achieving acceptable reliability is accomplished by ensuring adequate levels of equipment availability, plant maintainability, fuel and water availability, and resistance to natural hazards. Staff examines these factors for the project and compares them to industry norms. If they compare favorably, staff can conclude that the UGGPP will be as reliable as other peaking power plants on the electric system, and will therefore not degrade system reliability.

## **EQUIPMENT AVAILABILITY**

Equipment availability will be ensured by use of appropriate quality assurance/quality control (QA/QC) programs during design, procurement, construction and operation of the plant, and by providing for adequate maintenance and repair of the equipment and systems (discussed below).

### ***QA/QC PROGRAM***

The applicant describes a QA/QC program (El Paso 2000a, AFC § 4.3.7) typical of the power industry. Equipment will be purchased from qualified suppliers that employ an approved QA program. Designs will be checked and equipment will be inspected on receipt; installation will be inspected and systems tested. Staff expects implementation of this program to yield typical reliability of design and construction. To ensure such implementation, staff has proposed appropriate conditions of certification under the portion of this document entitled **Facility Design**.

## **PLANT MAINTAINABILITY**

### ***MAINTENANCE PROGRAM***

El Paso proposes to establish a plant maintenance program typical of the industry (El Paso 2000a, AFC §§ 3.9.1.2, 4.3.1.1, 4.3.1.3, 4.3.2.1, 4.3.2.3, 4.3.4). A peaking plant is shut down every night, affording plenty of opportunity to perform any needed maintenance and repairs without compromising plant availability. El Paso's maintenance organization, experienced in the maintenance of such facilities, will perform maintenance on the plant consistent with typical industry standards. In light of these plans, staff expects that the project will be adequately maintained to ensure acceptable reliability.

## **FUEL AND WATER AVAILABILITY**

For any power plant, the long-term availability of fuel and of process water is necessary to ensure reliability. The need for reliable sources of fuel and water is obvious; lacking long-term availability of either source, the service life of the plant may be curtailed, threatening the supply of power as well as the economic viability of the plant.

### ***FUEL AVAILABILITY***

The UGGPP will burn natural gas from the Pacific Gas & Electric Company (PG&E) system. Gas will be supplied to the plant from the existing United Cogen, Inc. (UCI) plant. This cogen power plant acquires its gas from PG&E's existing pipeline near

South Airport Boulevard (El Paso 2000a, AFC §§ 1.1, 1.4.3, 3.4, 3.7.1, 4.3.5). This natural gas system, which provides access to gas from the Rocky Mountains, Canada and the Southwest, represents a resource of considerable capacity. This system offers access to far more gas than the plant would require. Staff agrees with the applicant's prediction that there will be adequate natural gas supply and pipeline capacity to meet the project's needs.

### ***WATER SUPPLY RELIABILITY***

The UGGPP will obtain water for gas turbine injection, inlet air evaporative cooling and other plant uses from the existing UCI supply system (El Paso 2000a, AFC §§ 1.1, 1.4.3, 3.4, 3.4.5.1.1, 3.7.2, 4.3.6). Demineralized water will be produced on-site by a temporary demineralizer (El Paso 2000a, AFC §§ 1.4.2, 3.4.5.1.1). Potable water will be supplied from the existing SFO potable water system (El Paso 2000a, AFC § 3.4). Note that there is no substantial consumptive use of cooling water, as would be the case with a combined cycle power plant. Cooling of lube oil and other equipment will be via a closed cooling loop system (El Paso 2000a, AFC § 1.6.3). Staff believes this source yields sufficient likelihood of a reliable supply of water. (For further discussion of water supply, see that portion of this document entitled **Water Resources**.)

### **POWER PLANT RELIABILITY IN RELATION TO NATURAL HAZARDS**

Natural forces can threaten the reliable operation of a power plant. High winds, flooding and seiches (waves in inland bodies of water) will not likely represent a hazard for this project, but seismic shaking (earthquake) and tsunamis (tidal waves) present credible threats to reliable operation (see those portions of this document entitled **Facility Design** and **Geology and Paleontology**).

### ***SEISMIC SHAKING***

The site lies within Seismic Zone 4 (El Paso 2000a, AFC §§ 1.6.2, 3.3.2.2, 4.1.1.1); see that portion of this document entitled **Geology and Paleontology**. The project will be designed and constructed to the current LORS. Compliance with current LORS applicable to seismic design represents an upgrading of performance during seismic shaking, compared to older facilities, due to the fact that these LORS have been periodically and continually upgraded. By virtue of being built to the latest seismic design LORS, this project will likely perform at least as well as, and perhaps better than, existing plants in the electric power system. Staff has proposed conditions of certification to ensure this; see that portion of this document entitled **Facility Design**. In light of the historical performance of California power plants and the electrical system in seismic events, staff believes there is no special concern with power plant functional reliability affecting the electric system's reliability due to seismic events.

### ***TSUNAMI***

Due to its location adjacent to San Francisco Bay, and to its low altitude (14 feet above mean sea level) (El Paso 2000a, AFC § 3.3.2.1), the project could conceivably be impacted by a tsunami. This eventuality will be addressed by

designing and constructing the project to the current LORS (El Paso 2000a, AFC §§ 1.5, 4.1.1.1).

## **COMPARISON WITH EXISTING FACILITIES**

Industry statistics for availability factors (as well as many other related reliability data) are kept by the North American Electric Reliability Council (NERC). NERC continually polls utility companies throughout the North American continent on project reliability data through its Generating Availability Data System (GADS), and periodically summarizes and publishes the statistics on the Internet (<http://www.nerc.com>). NERC reports the following summary generating unit statistics for the years 1994 through 1998 (NERC 1999):

### **For Gas Turbine units (20 - 49 MW)**

Availability Factor = 88.70 percent

### **For Gas Turbine units (50 + MW)**

Availability Factor = 90.40 percent

The gas turbine that will be employed in the project, the General Electric (GE) LM6000, has been on the market for several years now, and can be expected to exhibit typically high availability. The applicant's prediction of an annual availability factor in the range of 95 percent (El Paso 2000a, AFC §§ 4.3.1, 4.3.1.2, 4.3.1.2.1, 4.3.1.3) appears reasonable compared to the NERC figures for similar plants throughout North America (see above) for three reasons.

First, since the plant will be utilized chiefly for peaking, it will be shut down many nights and weekends. Necessary maintenance, and noncritical repairs, can be performed when the plant is not dispatched, thus not affecting availability.

Second, the plant will be utilized chiefly for seasonal peaking, operating mainly in the summer or winter months. Any extensive scheduled maintenance, such as gas turbine overhauls, can be performed during the off season (fall or spring), thus not affecting plant availability.

Third, the applicant has substantial experience operating and maintaining this type of power plant. Planned outages will be performed per equipment manufacturers' recommendations, during periods of low electrical demand, on a schedule that has gained the concurrence of the Cal-ISO. El Paso claims its other similar power plants, maintained by El Paso's maintenance arm, have exhibited availability over 95 percent since 1988 (El Paso 2000a, AFC § 4.3.1.2.1). S&S Energy Products, the GE-owned entity that packages the LM6000 turbine generator for power plant use, claims reliability levels for this type of power plant exceeding 96 percent (GTW 2000).

The applicant's estimate of plant availability therefore appears realistic. The stated procedures for assuring design, procurement and construction of a reliable power plant appear to be in keeping with industry norms, and staff believes they are likely to yield an adequately reliable plant.

## FACILITY CLOSURE

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Closure of the facility, whether planned or unplanned, cannot impact project reliability. Reliability impacts on the electric system from facility closure, should there be any, are dealt with in that portion of this document entitled **Transmission System Engineering**.

## CONCLUSION

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The applicant predicts an equivalent availability factor in the range of 95 percent, which staff believes is achievable in light of the industry norm of 89 to 90 percent for similar plants operated year-round, the applicant's prior experience with other similar power plants, and the seasonal nature of the proposed plant's operation. Based on a review of the proposal, staff concludes that the plant will be built and operated in a manner consistent with industry norms for reliable operation. This should provide an adequate level of reliability. No Conditions of Certification are proposed.



## REFERENCES

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- Detmers, Jim. 1999. Director of Maintenance and Reliability, California Independent System Operator. Interview with Steve Baker (California Energy Commission), July 13, 1999.
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- McGraw-Hill (McGraw-Hill Energy Information Services Group). 1994. *Operational Experience in Competitive Electric Generation, an Executive Report*, 1994.
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# POWER PLANT EFFICIENCY

Testimony of Steve Baker

## INTRODUCTION

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The Energy Commission makes findings as to whether energy use by the United Golden Gate Power Project, Phase I (UGGPP) will result in significant adverse impacts on the environment, as defined in the California Environmental Quality Act (CEQA). If the Energy Commission finds that the UGGPP's consumption of energy creates a significant adverse impact, it must determine whether there is any feasible mitigation measures that could eliminate or minimize the impacts. In this analysis, staff addresses the issue of inefficient and unnecessary consumption of energy.

In order to support the Energy Commission's findings, this analysis will:

- determine whether the facility will likely present any adverse impacts upon energy resources;
- determine whether these adverse impacts are significant; and if so,
- determine whether feasible mitigation measures exist that would eliminate the adverse impacts, or reduce them to a level of insignificance.

## LAWS, ORDINANCES, REGULATIONS AND STANDARDS (LORS)

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### FEDERAL

No federal laws apply to the efficiency of this project.

### STATE

#### ***CALIFORNIA ENVIRONMENTAL QUALITY ACT GUIDELINES***

CEQA Guidelines state that the environmental analysis "...shall describe feasible measures which could minimize significant adverse impacts, including where relevant, inefficient and unnecessary consumption of energy" (Cal. Code Regs., tit. 14, § 15126.4(a)(1)). Appendix F of the Guidelines further suggests consideration of such factors as the project's energy requirements and energy use efficiency; its effects on local and regional energy supplies and energy resources; its requirements for additional energy supply capacity; its compliance with existing energy standards; and any alternatives that could reduce wasteful, inefficient and unnecessary consumption of energy (Cal. Code regs., tit. 14, § 15000 et seq., Appendix F).

### LOCAL

No local or county ordinances apply to power plant efficiency.

## SETTING

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El Paso Merchant Energy Company (El Paso) proposes to construct and operate a (nominal) 50 MW simple cycle power plant to generate peaking power and black start capability during peak demand periods, selling directly to customers through bilateral contracts or on the spot market via the Power Exchange (PX) (El Paso 2000a, AFC §§ 1.1, 3.4, 3.9.1.2, 4.3.3, 9.5.1, 10.3; Appendix A). (Note that this nominal rating is based upon preliminary design information and generating equipment manufacturers' guarantees. The project's actual maximum generating capacity will differ from, and may exceed, this figure.) The UGGPP will consist of one General Electric LM6000 Sprint combustion turbine generator with inlet air spray misting producing up to 50.4 MW. The gas turbine will be equipped with water injection and selective catalytic reduction (SCR) to control air emissions, and will have dual fuel capability (El Paso 2000a, AFC §§ 1.1, 1.4.2, 1.6.3; Figure 1.2-1; §§ 3.1, 3.4, 3.4.3, 3.4.3.1, 3.4.5.3.2, 3.9.1.1, 4.3.5; Appendix A-1; 2000b, Appendix A-2). El Paso intends to absorb the project into the future 570 MW United Golden Gate Power Project, which will add two Frame 7F gas turbine generators and a steam turbine generator to this peaker to form a three-on-one combined cycle power plant. Under current law (Pub. Resources Code, § 25552), if this project is not incorporated into a combined cycle project, it must cease operation within three years.

## ANALYSIS

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### ADVERSE IMPACTS ON ENERGY RESOURCES

The inefficient and unnecessary consumption of energy, in the form of non-renewable fuels such as natural gas and oil, constitutes an adverse environmental impact. An adverse impact can be considered significant if it results in:

- adverse effects on local and regional energy supplies and energy resources;
- a requirement for additional energy supply capacity;
- noncompliance with existing energy standards; or
- the wasteful, inefficient and unnecessary consumption of fuel or energy.

### ***PROJECT ENERGY REQUIREMENTS AND ENERGY USE EFFICIENCY***

Any power plant large enough to fall under Energy Commission siting jurisdiction will consume large amounts of energy. The UGGPP will burn natural gas at a nominal rate up to 450 million Btu per hour LHV<sup>1</sup> (El Paso 2000b, Appendix A-2). This is a substantial rate of energy consumption, and holds the potential to impact energy supplies.

Under expected project conditions, electricity will be generated at a full load efficiency of 38 to 39 percent LHV (El Paso 2000a, AFC Appendix A-1; 2000b, Appendices A-1, A-2, A-3). This can be compared to the average fuel efficiency of

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<sup>1</sup> Lower heating value.

a typical utility company baseload power plant, commonly used for peaking power, at approximately 35 percent LHV. As will be seen below, the project's fuel efficiency compares favorably to other possible peaking technologies.

### ***ADVERSE EFFECTS ON ENERGY SUPPLIES AND RESOURCES***

The applicant has described its sources of supply of natural gas for the UGGPP (El Paso 2000a, AFC §§ 1.1, 1.4.3, 3.4, 3.7.1, 4.3.5). The project will burn natural gas from the existing Pacific Gas & Electric Company (PG&E) pipeline near South Airport Boulevard that serves the existing United Cogen, Inc. cogeneration power plant. The PG&E gas supply infrastructure is extensive, offering access to vast reserves of gas from the Rocky Mountains, Canada and the Southwest. This source represents far more gas than would be required for a project of this size. Energy Commission predictions are that natural gas supplies will be adequate for many years into the future. It is therefore highly unlikely that the UGGPP could pose a substantial increase in demand for natural gas in California.

### ***ADDITIONAL ENERGY SUPPLY REQUIREMENTS***

Natural gas fuel will be supplied to the project by the existing pipeline that supplies the United Cogen, Inc. cogeneration power plant from an existing PG&E pipeline near South Airport Boulevard (El Paso 2000a, AFC §§ 1.1, 1.4.3, 3.4, 3.4.5.3.2, 3.7.1, 4.3.5). This line is of sufficient size to serve both projects, and should provide adequate access to natural gas fuel. There is no real likelihood that the UGGPP will require the development of additional energy supply capacity.

### ***COMPLIANCE WITH ENERGY STANDARDS***

No standards apply to the efficiency of the UGGPP or other non-cogeneration projects.

### ***ALTERNATIVES TO REDUCE WASTEFUL, INEFFICIENT AND UNNECESSARY ENERGY CONSUMPTION***

The UGGPP could be deemed to create significant adverse impacts on energy resources if alternatives existed that would reduce the project's use of fuel. Evaluation of alternatives to the project that could reduce wasteful, inefficient or unnecessary energy consumption first requires examination of the project's energy consumption. Project fuel efficiency, and therefore its rate of energy consumption, is determined by the configuration of the power producing system and by the selection of equipment used to generate power.

### **PROJECT CONFIGURATION**

The UGGPP will be configured as a single-train simple cycle power plant, in which electricity is generated by one gas turbine generator (El Paso 2000a, AFC §§ 1.1, 1.4.2, 3.4). This configuration, with its short start-up time and fast ramping<sup>2</sup> capability, is well suited to providing peaking power.

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<sup>2</sup> Ramping is increasing and decreasing electrical output to meet load requirements.

## **EQUIPMENT SELECTION**

Modern gas turbines embody the most fuel-efficient electric generating technology available today. The LM6000 Sprint gas turbine to be employed in the UGGPP represents one of the most modern and efficient such machines now available. The applicant will employ one General Electric LM6000PC Enhanced Sprint gas turbine generator (El Paso 2000a, AFC §§ 3.4.3, 3.4.3.1). The Sprint version of this machine is nominally rated at 47.3 MW and 41.4 percent efficiency LHV at ISO<sup>3</sup> conditions (GTW 1999). The Enhanced Sprint version, which adds inlet air fogging to the Sprint machine, is capable of generating 50.4 MW at these same conditions (El Paso 2000b, Appendix A-2; GTW 2000).

## **EFFICIENCY OF ALTERNATIVES TO THE PROJECT**

The project objectives are; 1) to generate temporary peaking power to the PG&E grid that serves the San Francisco peninsula corridor during peak demand periods, and 2) to provide black start capability. Power will be sold on the spot market or via bilateral contracts (El Paso 2000a, AFC §§ 3.4, 3.4.2, 3.9.1.2, 4.3.1.3, 4.3.3).

### ***Alternative Generating Technologies***

The applicant addresses alternative generating technologies in its application (El Paso 2000a, AFC § 3.11.3.2). Geothermal, hydroelectric and biomass were all considered. The project's primary objective is to compete as a merchant peaking plant (El Paso 2000a, AFC §§ 3.4, 3.9.1.2, 4.3.3). Given the project objectives, location and air pollution control requirements, staff agrees with the applicant that only natural gas-burning, simple-cycle gas turbines are feasible. The only real alternative, a combined cycle gas turbine power plant, could not be brought on-line in the required time frame. In fact, the applicant plans to build a 570 MW combined cycle power plant incorporating this peaker.

### ***Natural Gas-Burning Technologies***

Fuel consumption is one of the most important economic factors in selecting an electric generator; fuel typically accounts for over two-thirds of the total operating costs of a fossil-fired power plant (Power 1994). Under a competitive power market system, where operating costs are critical in determining the competitiveness and profitability of a power plant, the plant owner is thus strongly motivated to purchase fuel efficient machinery.

Capital cost is also important in selecting generating machinery. Recent progress in the development of gas turbines, incorporating technological advances made in the development of aircraft (jet) engines, combined with the cost advantages of assembly-line manufacturing, has made available machines that not only offer the lowest available fuel costs, but at the same time sell for the lowest per-kilowatt capital cost.

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<sup>3</sup> International Standards Organization (ISO) standard conditions are 15°C (59°F), 60 percent relative humidity, and one atmosphere of pressure (equivalent to sea level).

El Paso has selected the General Electric (GE) TM6000 Enhanced Sprint, one of the most modern aeroderivative gas turbine generators available. Alternative machines that can meet the project's generating capacity and schedule objectives are few:

Machine	Generating Capacity (MW)	Efficiency (LHV)
GE LM2500	22.8	36.8 %
GE LM2500+	28.6	38.5 %
GE LM6000	43.4	41.2 %
<b>GE LM6000 Sprint</b>	<b>47.3</b>	<b>41.4 %</b>
Turbo Power FT8 Power Pac	25.5	38.1 %

Source: GTW 1999

The LM2500 and FT8 are aeroderivative machines, adapted from General Electric and Pratt & Whitney aircraft engines, respectively. The LM2500 is popular in ships, and sees much service in new and refitted commercial and naval vessels. The LM6000 is also an aeroderivative, based on a larger aircraft engine. The chief difference between the two is generating capacity; the LM6000 is too large for efficient shipboard use. Two LM2500s give the same total output, with the advantage of allowing one machine to be shut down, and the other operated nearer full load (and nearer peak efficiency) when only partial power is needed.

The LM6000 Sprint is further enhanced by the incorporation of spray intercooling (thus the name, SPRay INTERcooling). This takes advantage of the aeroderivative machine's two-stage compressor.<sup>4</sup> By spraying water into the airstream between the two compressor stages, the air is cooled, reducing the amount of work that must be performed by the second stage compressor. This reduces the power consumed by the compressor, yielding greater net power output and higher fuel efficiency. The benefits in generating capacity and fuel efficiency increase with rising ambient air temperatures. At temperatures above 90°F, the Enhanced Sprint machine enjoys a four percent increase in both power output and efficiency (GTW 2000).

### ***Inlet Air Cooling***

A further choice of alternatives involves the selection of gas turbine inlet air cooling methods.<sup>5</sup> The two commonly used techniques are the evaporative cooler and the chiller. A mechanical chiller can offer greater power output than the evaporative cooler on hot, humid days, but consumes electric power to operate its refrigeration process, thus slightly reducing overall net power output and, thus, overall efficiency. An absorption chiller uses less electric power, but necessitates the use of a substantial inventory of ammonia. An evaporative cooler boosts power output best on dry days; it uses less electric power than a mechanical chiller, possibly yielding

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<sup>4</sup> The larger industrial type gas turbines typically are single-shaft machines, with single-stage compressor and turbine. Aeroderivatives are two-shaft (or, in some cases, three-shaft) machines, with two-stage compressors and turbines.

<sup>5</sup> A gas turbine's power output decreases as ambient air temperatures rise. The LM6000 Sprint produces peak power at 50°F; this peak output can be maintained in much hotter weather by cooling the inlet air (the "enhanced" option).

slightly higher operating efficiency. The difference in efficiency among these techniques is relatively insignificant.

The applicant proposes to employ evaporative cooling (El Paso 2000a, AFC §§ 3.4.3, 3.4.3.1, 3.9.1.1). Given the climate at the project site and the relative lack of clear superiority of one system over the other, staff agrees that the applicant's approach will yield no significant adverse energy impacts.

In conclusion, the project configuration (single-train simple cycle) and generating equipment (LM6000 Enhanced Sprint gas turbine) chosen appear to represent the most efficient feasible combination to satisfy the project objectives. There are no alternatives that could significantly reduce energy consumption.

## **CUMULATIVE IMPACTS**

Staff knows of two nearby major natural gas-consuming projects that hold the potential for cumulative energy consumption impacts when aggregated with the UGGPP. These are the upcoming 570 MW United Golden Gate combined cycle power plant, which will include this peaker, and the proposed 540 MW Potrero Power Plant Unit 7 Project. The applicants of these projects will be required to address fuel supply impacts when those projects are presented to the Energy Commission. Any potential cumulative impacts will be dealt with at that time.

Staff believes that construction and operation of the UGGPP will not bring about indirect impacts, in the form of additional fuel consumption, that would not have occurred but for the UGGPP. California's electric power will be generated by those power plants that bid most successfully to sell their output to the California Power Exchange. Since no significantly more efficient power plants are envisioned to compete against the UGGPP, no indirect impacts are likely.

## **FACILITY CLOSURE**

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Closure of the facility, whether planned or unplanned, will not influence, nor will it be influenced by, project efficiency. Any efficiency impacts due to closure of the project would be on the electric system as a whole. Yet the vast size of the electric system serving California, the number of generating plants offering to sell power into it, and the existence of the California Independent System Operator and Power Exchange to ensure the efficient management of the system, all lend assurance that closure of this facility will not produce significant adverse impacts on efficiency.

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CONCLUSIONS**

The UGGPP, if constructed and operated as proposed, would generate approximately 50 MW of electric power at an overall project fuel efficiency between 38 and 39 percent. While it will consume substantial amounts of energy, it will do so in the most efficient manner practicable. It will not create significant adverse



effects on energy supplies or resources, will not require additional sources of energy supply, and will not consume energy in a wasteful or inefficient manner. No energy standards apply to the project. Staff therefore concludes that the UGGPP would present no significant adverse impacts upon energy resources.

No cumulative impacts on energy resources are likely. Facility closure would not likely present significant impacts on electric system efficiency.

## **RECOMMENDATION**

From the standpoint of energy efficiency, staff recommends certification of the UGGPP. No Conditions of Certification are proposed.

## REFERENCES

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- El Paso Merchant Energy Company (El Paso). 2000 a. Application for Certification, United Golden Gate Power Project, Phase I (00-AFC-5). Submitted to the California Energy Commission, September 29, 2000.
- El Paso Merchant Energy Company (El Paso). 2000 b. Supplementary AFC Material, United Golden Gate Power Project, Phase I (00-AFC-5). Submitted to the California Energy Commission, October 17, 2000.
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# TRANSMISSION SYSTEM ENGINEERING

Testimony of Mark Hesters and Al McCuen

## INTRODUCTION

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The Transmission System Engineering (TSE) analysis provides the basis for the findings in the Energy Commission's decision. This assessment indicates whether or not the transmission facilities associated with the proposed project conform to all applicable laws, ordinances, regulations and standards (LORS)<sup>1</sup> required for safe and reliable electric power transmission.

The El Paso Merchant Energy Company (El Paso), the applicant, proposes to connect their project, the United Golden Gate Power Project, Phase I (UGGPP) to the existing United Cogeneration Inc (UCI) switchyard and Pacific Gas and Electric's (PG&E) transmission system. The California Independent System Operator (Cal-ISO) is responsible for ensuring electric system reliability for all participating transmission owning utilities and determines both the standards necessary to achieve reliability and whether a proposed project conforms with those standards. The Energy Commission will rely on the Cal-ISO's determinations to make its finding related to applicable reliability standards, the need for additional transmission facilities, and environmental review of the whole of the project. In this case, staff is primarily a facilitator, coordinating the Cal-ISO's process and results with the certification process and the Energy Commission decision. The Cal-ISO will provide testimony at the Energy Commission's hearings.

Staff's analysis also evaluates the power plant switchyard, outlet line, and termination facilities identified by the applicant and provides proposed conditions of certification to ensure that the project complies with applicable LORS during the design, construction, operation and potential closure of the project.

## PROJECT DESCRIPTION

The UGGPP will consist of one 51-megawatt (MW) nominal output unit. The unit will connect to a 13.8 kV to 115 kV step-up transformer in the power plant switchyard. The power plant switchyard will connect via a 150-foot long single circuit 115 kV line to the existing UCI switchyard. A 115 kV breaker, disconnect switch, bus work and miscellaneous equipment will be installed inside the fenceline of the existing UCI switchyard. This configuration for the switchyard and interconnection is acceptable.

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<sup>1</sup> The applicable LORS include the California Public Utilities Commission (CPUC) General Order 95 (GO-95), CPUC Rule 21, Western Systems Coordinating Council (WSCC) Reliability Criteria, North American Electric Reliability Council (NERC) Planning Standards, Cal-ISO Reliability Criteria, Cal-ISO Scheduling Protocols and Dispatch Protocols, and Cal-ISO Participating Generator Agreement.

## **SYSTEM RELIABILITY**

An Interconnection study is performed to determine the effects of connecting a new power plant to the existing electric grid. The study identifies any impacts and ways impacts can be minimized or negated. The UGGPP Interconnection study indicates no overloads would be caused by the project under normal or contingency conditions and no facilities outside an existing fenceline are anticipated; staff concurs (2000c). A more detailed study by PG&E is anticipated by late January 2001 to verify these initial conclusions. Shortly thereafter, the Cal-ISO will provide a letter of "preliminary approval" which is expected to verify the above initial conclusions. PG&E has indicated based on analysis of a 95 MW unit at the same termination that UGGPP would not create system impacts or limitations (PG&E 2001).

## **CUMULATIVE IMPACTS**

The UGGPP is located in a major load center, the San Francisco Peninsula, which will minimize potential cumulative impacts.

## **FACILITY CLOSURE**

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All participating generators must sign a Participating Generator Agreement (Cal-ISO 1998a, Cal-ISO 1998b). The Participating Generator Agreement includes procedures for planned, unexpected temporary closure and unexpected permanent closure. This agreement must be developed by or verified by the project owner and staff to facilitate effective communication and coordination between the generating station owner, the PTO and the Cal-ISO to ensure safety and system reliability.

## **CONCLUSIONS AND RECOMMENDATIONS**

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### **CONCLUSIONS**

1. Staff's findings indicate that no significant additional new facilities will be required for interconnection of the UGGPP to meet NERC, WSCC, and Cal-ISO reliability criteria.
2. The Cal-ISO will confirm staff's conclusion upon issuance of the final interconnection approval.
3. The power plant switchyard, outlet lines, and termination are acceptable and will comply with LORS assuming the conditions of certification are implemented.
4. The Cal-ISO will provide testimony on the preliminary approval letter at the Commissions hearings.
5. The issuance of the Cal-ISO's final interconnection approval will assure conformance with NERC, WSCC and Cal-ISO reliability criteria. Condition of certification TSE-1h provides for Energy Commission review of the Cal-ISO final interconnection approval letter and the PG&E/applicant Facility Interconnection Agreement.

## RECOMMENDATIONS

Staff proposes the following conditions of certification to insure system reliability and conformance with LORS.

## CONDITIONS OF CERTIFICATION

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**TSE-1** The project owner shall ensure that the design, construction and operation of the proposed transmission facilities will conform to requirements listed below. The substitution of Compliance Project Manager (CPM) approved “equivalent” equipment and equivalent switchyard configurations is acceptable.

- a. The power plant switchyard, outlet line and termination shall meet or exceed the electrical, mechanical, civil and structural requirements of CPUC General Order 95, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, National Electric Code (NEC), and related Industry Standards.
- b. Breakers and busses in the power plant switchyard and other switchyards, where applicable, shall be sized to comply with a short-circuit analysis.
- c. The UGGPP 115 kV switchyard shall include a single switch and breaker.
- d. The new transmission line will be a single circuit 115 kV line terminating at the UCI switchyard.
- e. Termination facilities at the interconnection shall comply with applicable Cal-ISO and PG&E interconnection standards (PG&E Interconnection Handbook and CPUC Rule 21).
- f. Outlet line crossings and line parallels with transmission and distribution facilities shall be coordinated with the transmission line owner and comply with the owner’s standards.
- g. The outlet line will use conductors similar to the 477-kcmil ACSR conductors.
- h. The applicant shall provide a Detailed Facilities Study including a description of remedial action scheme sequencing and timing and an executed Generator Special Facilities Agreement (GSFA) for the transmission interconnection with PG&E. The Detailed Facilities Study and GSFA shall be coordinated with the Cal-ISO.

**Verification:** At least 30 days prior to start of construction of transmission facilities, the project owner shall submit for approval to the CPM:

- a. Design drawings, specifications and calculations conforming with CPUC General Order 95 and related industry standards, where applicable, for the poles/towers, foundations, anchor bolts, conductors, grounding systems and major switchyard equipment.

- b. For each element of the transmission facilities as identified above, the submittal package to the CPM shall contain the design criteria, a discussion of the calculation method(s), a sample calculation based on “worst case conditions” and a statement by the registered engineer in responsible charge (signed and sealed) that the transmission element(s) will conform with CPUC General Order 95, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, the NEC, PG&E Interconnection Handbook, CPUC Rule 21 and related industry standards.
- c. Electrical one-line diagrams signed and sealed by the registered professional electrical engineer in responsible charge, a route map, and an engineering description of equipment and the configurations covered by requirements a through h above. The Detailed Facilities Study and GSFA shall concurrently be provided. Substitution of equipment and substation configurations shall be identified and justified by the project owner for CPM approval.

**TSE-2** The project owner shall inform the CPM of any impending changes, which may not conform to the requirements 1a through 1h of TSE-1, and have not received CPM approval, and request approval to implement such changes. A detailed description of the proposed change and complete engineering, environmental, and economic rationale for the change shall accompany the request. Construction involving changed equipment, transmission facilities or switchyard configurations shall not begin without prior written approval of the changes by the CPM.

**Verification:** At least 30 days prior to construction of transmission facilities, the project owner shall inform the CPM of any impending changes which may not conform to requirements of TSE-1 and request approval to implement such changes.

**TSE-3** The project owner shall be responsible for the inspection of the transmission facilities during and after project construction and any subsequent CPM approved changes thereto, to ensure conformance with CPUC General Order 95, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, the NEC, PG&E Interconnection Handbook, CPUC Rule 21 and related industry standards. In case of non-conformance, the project owner shall inform the CPM in writing within 10 days of discovering such non-conformance and describe the corrective actions to be taken

**Verification:** Within 60 days after first synchronization of the project, the project owner shall submit to the CPM:

- a. “As built” engineering description(s) and one-line drawings of the electrical portion of the facilities signed and sealed by the registered electrical engineer in responsible charge. A statement attesting to conformance with CPUC General Order 95, Title 8, CCR, Articles 35, 36 and 37 of the, “High Voltage Electric Safety Orders”, the NEC, PG&E Interconnection Handbook, CPUC Rule 21 and related industry standards, and these conditions shall be concurrently provided.

- b. An “as built” engineering description of the mechanical, structural, and civil portion of the transmission facilities signed and sealed by the registered engineer in responsible charge.
- c. A summary of inspections of the completed transmission facilities, and identification of any nonconforming work and corrective actions taken, signed and sealed by the registered engineer in responsible charge.

## REFERENCES

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- Cal-ISO (California Independent System Operator). 1998a. Cal-ISO Tariff Scheduling Protocol posted April 1998, Amendments 1,4,5,6, and 7 incorporated.
- Cal-ISO (California Independent System Operator). 1998b. Cal-ISO Dispatch Protocol posted April 1998.
- NERC (North American Electric Reliability Council). 1998. NERC Planning Standards, September 1997.
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- El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.
- El Paso Merchant Energy (El Paso). 2000c. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Supplemental Information for Appendix B (b) (2) (C). Filed with the California Energy Commission, September 29, 2000.
- Pacific Gas and Electric Company (PG&E). 2001. Letter from Sherman Chen (PG&E) to Roger Johnson (CEC staff). Filed with the California Energy Commission, January 03, 2001.



## DEFINITION OF TERMS

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AAC	All Aluminum conductor.
Ampacity	Current-carrying capacity, expressed in amperes, of a conductor at specified ambient conditions, at which damage to the conductor is nonexistent or deemed acceptable based on economic, safety, and reliability considerations.
Ampere	The unit of current flowing in a conductor.
Bundled	Two wires, 18 inches apart.
Bus	Conductors that serve as a common connection for two or more circuits.
Conductor	The part of the transmission line (the wire) which carries the current.
Congestion Management	Congestion management is a scheduling protocol, which provides that dispatched generation and transmission loading (imports), will not violate criteria.
Emergency Overload	See Single Contingency. This is also called an L-1.
Kcmil or kcm	Thousand circular mil. A unit of the conductor's cross sectional area, when divided by 1,273, the area in square inches is obtained.
Kilovolt (kV)	A unit of potential difference, or voltage, between two conductors of a circuit, or between a conductor and the ground.
Loop	An electrical cul de sac. A transmission configuration, which interrupts an existing circuit, diverts it to another connection and returns it back to the interrupted circuit, thus forming a loop or cul de sac.
Megavar	One megavolt ampere reactive.
Megavars	Mega-volt-Ampere-Reactive. One million Volt-Ampere-Reactive. Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system.
Megavolt ampere (MVA)	

A unit of apparent power, equals the product of the line voltage in kilovolts, current in amperes, the square root of 3, and divided by 1000.

Megawatt (MW)

A unit of power equivalent to 1,341 horsepower.

Normal Operation/ Normal Overload

When all customers receive the power they are entitled to without interruption and at steady voltage, and no element of the transmission system is loaded beyond its continuous rating.

N-1 Condition

See Single Contingency.

Outlet

Transmission facilities (circuit, transformer, circuit breaker, etc.) linking generation facilities to the main grid.

Power Flow Analysis

A power flow analysis is a forward looking computer simulation of essentially all generation and transmission system facilities that identifies overloaded circuits, transformers and other equipment and system voltage levels.

Reactive Power

Reactive power is generally associated with the reactive nature of motor loads that must be fed by generation units in the system. An adequate supply of reactive power is required to maintain voltage levels in the system.

Remedial Action Scheme (RAS)

A remedial action scheme is an automatic control provision, which, for instance, will trip a selected generating unit upon a circuit overload.

SF6

Sulfur hexafluoride is an insulating medium.

Single Contingency

Also known as emergency or N-1 condition, occurs when one major transmission element (circuit, transformer, circuit breaker, etc.) or one generator is out of service.

Solid dielectric cable

Copper or aluminum conductors that are insulated by solid polyethylene type insulation and covered by a metallic shield and outer polyethylene jacket.

**Switchyard** A power plant switchyard (switchyard) is an integral part of a power plant and is used as an outlet for one or more electric generators.

**Thermal rating**  
See ampacity.

**TSE** Transmission System Engineering.

**Undercrossing**  
A transmission configuration where a transmission line crosses below the conductors of another transmission line, generally at 90 degrees.

**Underbuild**  
A transmission or distribution configuration where a transmission or distribution circuit is attached to a transmission tower or pole below (under) the principle transmission line conductors.



# ALTERNATIVES

Testimony of Kevin Kennedy, Ph.D.

## INTRODUCTION

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Staff is required to examine the “feasibility of available site and facility alternatives to the applicant’s proposal that substantially lessen the significant adverse impacts of the proposal on the environment”. The purpose of staff’s alternatives analysis is to provide the Energy Commission with an analysis of a reasonable range of feasible alternative sites which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project (Cal. Code Regs., tit. 14, §15126.6; Cal. Code Regs., tit. 20, § 1765). This section identifies the potential significant impacts of the proposed project and analyzes technology alternatives and alternative sites that may reduce or avoiding significant impacts. Alternatives were developed in response to information provided by Energy Commission staff and staffs of other agencies.

## ALTERNATIVE ANALYSIS CRITERIA

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The “Guidelines for Implementation of the California Environmental Quality Act” (CEQA), Title 14, California Code of Regulations Section 15126.6(a), provide direction by requiring an evaluation of the comparative merits of “a range of reasonable alternatives to the project, or to the location of the project, which would feasibly attain most of the basic objectives of the project but would avoid or substantially lessen any of the significant effects of the project.” In addition, the analysis must address the “no project” alternative (Cal. Code Regs., tit. 14, §15126.6(e)).

The range of alternatives is governed by the “rule of reason” which requires consideration only of those alternatives necessary to permit informed decision-making and public participation. CEQA states that an environmental document does not have to consider an alternative of which the effect cannot be reasonably ascertained and of which the implementation is remote and speculative. (Cal. Code Regs., tit. 14, §15125(d)(5).) However, if the range of alternatives is defined too narrowly, the analysis may be inadequate. (City of Santee v. County of San Diego (4th Dist. 1989) 214 Cal. App. 3d 1438.)

To prepare this alternatives analysis, staff used the following methodology:

- Identify the basic objectives of the project.
- Identify and evaluate alternatives to the project. The principle project alternatives examined that do not require the construction of a natural gas-fired facility are increased energy efficiency (or demand side management) and the construction of alternative technologies (e.g. wind, solar, or geothermal).
- Identify and evaluate alternative locations or sites.
- Evaluate the impacts of not constructing the project (the “no project” alternative).

## DETERMINING THE SCOPE OF THE ALTERNATIVES ANALYSIS

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The purpose of staff's alternatives analysis is to provide the Energy Commission with a reasonable range of feasible alternatives which could substantially reduce or avoid any potentially significant adverse impacts of the proposed project. To accomplish this, staff must determine the appropriate scope of analysis. Staff has evaluated the proposed project, and determined that the project with the mitigation measures proposed by the applicant does not result in any significant impacts. For this reason, staff has limited the depth of analysis of alternatives to the proposed project.

## BASIC OBJECTIVES OF THE PROJECT

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After studying the applicant's Application for Certification (AFC), Energy Commission staff has determined the objectives of Phase I of UGGPP to be:

- to supply electricity on demand during periods of peak demand along the San Francisco Peninsula transmission corridor for up to three years beginning in August, 2001; and
- to expedite timely completion of the project and to minimize project impacts by locating near key infrastructure, such as transmission line interconnections and supplies of process water and natural gas.

## PROJECT DESCRIPTION AND SETTING

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A more complete description of the project and its setting is in the **PROJECT DESCRIPTION** section of this Staff Assessment (SA).

## POWER PLANT

Phase I of the UGGPP is a proposed nominal 51 MW simple-cycle, natural-gas fired power plant. The project will use a GE LM-6000 combustion turbine generator with a high-temperature selective catalytic reduction (SCR) system for air pollution control and a 140-foot stack. The project also includes a gas compressor, addition of a breaker, disconnect switch, and other miscellaneous equipment to the adjacent UCI switchyard, an aqueous ammonia injection system, a temporary reverse-osmosis water treatment system, and a control trailer. The site for the project is in the northern portion of the San Francisco International Airport, immediately east of the United Airlines Maintenance and Operations Center along North Access Road. The two-acre site is currently used as a parking lot. See **PROJECT DESCRIPTION Figure 1** for a map of the location of the proposed project site and related facilities.

## RELATED FACILITIES

### **NATURAL GAS SUPPLY**

Phase I of UGGPP will connect to the existing PG&E natural gas pipeline that serves the adjacent UCI facility.

## ***TRANSMISSION INTERCONNECTION***

Phase I of the UGGPP will connect to the transmission grid through the existing UCI switchyard, located immediately west of the UGGPP site. This connection will require addition of a breaker, disconnect switch, and other miscellaneous equipment to the adjacent UCI switchyard. See the **TRANSMISSION SYSTEM ENGINEERING** section of this SA for detailed information on the transmission interconnection.

## ***RAW WATER SUPPLY***

Raw water for Phase I of the UGGPP will be supplied from United Airlines Metal Removal Plant discharge water. See the **SOIL AND WATER RESOURCES** section of this SA for detailed information regarding uses of water by the project.

## ***WASTEWATER DISPOSAL***

The primary non-sanitary wastewater generated by Phase I of the UGGPP will be reject water from the reverse osmosis unit. This reject water will be sent to the UCI cooling tower for use as makeup water. Other waste streams include waste from a water sampling station, a utility basin for wash up, and equipment drains after passing through an oil/water separator. See the **SOIL AND WATER RESOURCES** section of this SA for detailed information regarding wastewater generation and disposal by the project.

## **POTENTIAL SIGNIFICANT ENVIRONMENTAL IMPACTS**

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As noted above, staff has evaluated the proposed project and determined that the project with the mitigation measures proposed by the applicant and Energy Commission staff does not result in any significant impacts.

## **ALTERNATIVES TO THE PROJECT**

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### **TECHNOLOGY ALTERNATIVES**

#### ***DEMAND SIDE MANAGEMENT***

One alternative to a power generation project could be programs to reduce energy consumption. These programs are typically called “energy efficiency,” “conservation,” or “demand side management” programs. One goal of these programs is to reduce overall electricity use; some programs also attempt to shift such energy use to off-peak periods.

The Energy Commission is responsible for several such programs, the most notable of which are energy efficiency standards for new buildings and for major appliances. The California Public Utilities Commission supervises various energy efficiency programs administered by the investor-owned utilities, and many municipal electric utilities have their own demand side management programs. The combination of

these programs constitutes the most ambitious overall approach to reducing electricity demand administered by any state in the nation.

The Energy Commission is also responsible for determining what the state's energy needs are in the future, using 5 and 12 year forecasts of both energy supply and demand. The Commission calculates the energy use reduction measures discussed above into these forecasts when determining what future electricity needs are, and how much additional generation will be necessary to satisfy the state's needs.

Having considered all of the demand side management that is "reasonably expected to occur" in its forecasts, the agency then determines how much electricity is needed. The most recent estimation of electricity needs is found in the 1996 Electricity Report.

The Warren-Alquist Act prohibits the agency, in its alternatives analysis, from considering such conservation programs to be alternatives to a proposed generation project (Pub. Resources Code, Section 25305(c)). This is because the approximate effect of such programs has already been accounted for in the agency's "integrated assessment of need," and the programs would not in themselves be sufficient to substitute for the additional generation calculated to be needed. The Warren-Alquist Act was amended in 1999 to delete the necessity of a Commission finding of "need" in power plant licensing cases. Nevertheless, the Commission's most recent need determination, adopted in 1997, makes it abundantly clear that conservation programs alone can not displace the need for power generation for California's growing economy.

## ***GENERATION TECHNOLOGY ALTERNATIVES***

Staff compared various alternative technologies with the proposed project, scaled to meet the project's objectives and time frame. Technologies examined were those principal electricity generation technologies that do not burn fossil fuels such as geothermal, solar and wind. Each of these technologies could be attractive from an environmental perspective because of the absence or reduced level of air pollutant emissions.

Solar and wind resources require large land areas in order to generate 50 megawatts of electricity. Specifically, utility scale solar thermal projects require between four and ten acres per megawatt depending on the type of system (parabolic trough, parabolic dish, or central receiver) (CEC 1996, pp. B.15.1-2). A project comparable to the proposed 51 megawatt Phase I UGGPP would require a minimum of 200 acres, or more than 100 times the amount of space taken by the proposed project. Wind generation "farms" generally require about 17 acres per megawatt, with 51 megawatts needing more than 850 acres, more than 400 times the amount of space taken by the proposed plant site (CEC 1996, pp. B.16.1).

Solar and wind technologies have the potential for significant land use impacts due to the large land areas required. Limited land is available for immediate solar or wind energy development along the San Francisco Peninsula. Additional solar and wind generation capacity is feasible in the San Francisco Bay Area, and is likely to



be developed in the short term. However, staff is unaware of any large scale solar or wind facility currently planned to be built on the San Francisco Peninsula. Such projects involve land use issues that could limit the size and feasibility of such alternative generation sources, and could affect the timing of such facilities becoming available if they were proposed. In addition, a key objective of this project is to supply electricity on demand during periods of peak demand along the San Francisco Peninsula transmission corridor for up to three years beginning in August, 2001. Solar and wind power projects are also less effective as on-demand peak generators because of their dependence on weather conditions. Therefore, such facilities do not provide an alternative to the proposed project.

Geothermal resources are available in limited areas of California, including the Geysers area north of San Francisco (CEC 2000). No significant geothermal resources are available on the San Francisco Peninsula. While development of additional geothermal resources in California is possible, geothermal power is not a feasible alternative to the proposed project.

## **SITING AND RELATED FACILITIES ALTERNATIVES**

### ***POWER PLANT SITING ALTERNATIVES***

El Paso's primary objective for developing Phase I of the UGGPP separate from the main project is to be able to provide electrical generation capacity along the San Francisco Peninsula during times of peak demand for three years starting in August 2001. To allow El Paso to meet this objective, alternative sites would need to be immediately available for development, provide ready access to a means to connect to the electrical transmission grid and to sources of adequate natural gas and water.

PG&E identified numerous substation sites in the San Francisco Bay Area as potential sites to interconnect temporary peaking power plants. However, the feasibility and preferability of such other sites is highly doubtful. Staff has not identified any significant impacts related to the Phase I of UGGPP that would make the proposed site unacceptable. This analysis of alternatives is governed by the "rule of reason" as stated in the CEQA Guidelines, which includes that "the alternatives shall be limited to ones that would avoid or substantially lessen any of the significant effects of the project" (Cal. Code Regs., tit. 14, §15126.6(f)). As discussed above, staff has not identified any significant impacts from the project. Therefore, no alternative sites have been analyzed. It is also noteworthy that no project at an alternative site not already planned could possibly be licensed and constructed to be on-line in the summer of 2001.

### ***RELATED FACILITIES ALTERNATIVES***

For the Phase I UGGPP, El Paso proposes to connect to the existing services serving the United Cogeneration Inc. (UCI) facility adjacent to the project site for natural gas, transmission interconnection, raw water supply, and wastewater disposal. Connecting to these services at the UCI facility minimizes the length of linear facilities such as pipelines or transmission lines associated with the project, and helps the project meet its objective of being online by August 1, 2001. Staff does not consider alternatives for these related facilities to be feasible.

## THE “NO PROJECT” ALTERNATIVE

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CEQA Guidelines and Energy Commission regulations require consideration of the “no project” alternative. This alternative assumes that the project is not constructed, and is compared to the proposed project. A determination is made whether the “no project” alternative is superior, equivalent, or inferior to the proposed project.

If the proposed project is not licensed, new air emissions from the project will be avoided. The existing parking lot where the facility would be built would remain a parking lot. In addition, 51 megawatts of peaking capacity would not be added to the area’s generation capacity, and regional electrical grid reliability would be lower. Electrical reliability at the airport would likewise be lower. The possibility of load shedding, power interruption, and even regional blackouts would be higher. Load interruption has its own environmental consequences, including higher air emissions from small-scale backup generators, which are normally diesel-fired. Load shedding and blackouts lead to public health and public safety hazards that can increase both accidents and overall mortality.

The project will comply with all air quality requirements. Staff has not identified any significant impacts resulting from the proposed Phase I of the UGGPP. The project also offers economic and electric benefits. Project construction and operation would have a small beneficial impact on both the study area’s economic base and fiscal resources through employment of both local and regional workers, as well as through the purchases of local and regional construction materials. The project would also provide additional electrical generation capacity at times of peak demand during the next three years. For these reasons, staff prefers the proposed project to the “no project” alternative.

## CONCLUSIONS AND RECOMMENDATION

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Staff has determined that the proposed site is preferred to the “no project” alternative. Staff does not believe that energy efficiency measures and alternative technologies (geothermal, solar, wind, and hydroelectric) present feasible alternatives to the proposed project.

## REFERENCES

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California Energy Commission (CEC). 1996. Energy Aware: Planning Guide for Energy Facilities. California Energy Commission, Sacramento, California. P700-96-006.

California Energy Commission (CEC). 2000. Map of Geothermal Resources in California, [http://www.energy.ca.gov/maps/geothermal\\_map.html](http://www.energy.ca.gov/maps/geothermal_map.html), accessed August 18, 2000.

El Paso Merchant Energy (El Paso). 2000a. Application for Certification, United Golden Gate Power Project, Phase I, San Mateo, California (00-AFC-5). Filed with the California Energy Commission, September 29, 2000.



# **GENERAL CONDITIONS INCLUDING COMPLIANCE MONITORING AND CLOSURE PLAN**

Testimony of Connie Bruins

## **INTRODUCTION**

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The project General Conditions Including Compliance Monitoring and Closure Plan (Compliance Plan) have been established as required by Public Resources Code section 25532. The plan provides a means for assuring that the facility is constructed, operated and closed in conjunction with air and water quality, public health and safety, environmental and other applicable regulations, guidelines, and conditions adopted or established by the California Energy Commission (Energy Commission) and specified in the written decision on the Application for Certification or otherwise required by law.

The Compliance Plan is composed of the following elements:

1. General conditions that:
  - a. set forth the duties and responsibilities of the Compliance Project Manager (CPM), the project owner, delegate agencies, and others;
  - b. set forth the requirements for handling confidential records and maintaining the compliance record;
  - c. state procedures for settling disputes and making post-certification changes;
  - d. state the requirements for periodic compliance reports and other administrative procedures that are necessary to verify the compliance status for all Energy Commission approved conditions; and
  - e. establish requirements for facility closure plans.
2. Specific conditions of certification:
  - a. Specific conditions of certification that follow each technical area contain the measures required to mitigate any and all potential adverse project impacts associated with construction, operation and closure to an insignificant level. Each specific condition of certification also includes a verification provision that describes the method of verifying that the condition has been satisfied.

## **GENERAL CONDITIONS OF CERTIFICATION**

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### **DEFINITIONS**

To ensure consistency, continuity and efficiency, the following terms, as defined, apply to all technical areas, including Conditions of Certification:

**SITE MOBILIZATION:**

Moving trailers and related equipment onto the site, usually accompanied by minor ground disturbance, grading for the trailers and limited vehicle parking, trenching for utilities, installing utilities, grading for an access corridor, and other related activities. Ground disturbance, grading, etc. for site mobilization are limited to the portion of the site necessary for placing the trailers and providing access and parking for the occupants. Site mobilization is for temporary facilities and is therefore not considered construction.

**GROUND DISTURBANCE:**

Onsite activity that results in the removal of soil or vegetation, boring, trenching or alteration of the site surface. This does not include driving or parking a passenger vehicle, pickup truck, or other light vehicle, or walking on the site.

**GRADING:**

Onsite activity conducted with earth-moving equipment that results in alteration of the topographical features of the site such as leveling, removal of hills or high spots, or moving of soil from one area to another.

**CONSTRUCTION:**

[From section 25105 of the Warren-Alquist Act.] Onsite work to install permanent equipment or structures for any facility. Construction does **not** include the following:

- a. The installation of environmental monitoring equipment.
- b. A soil or geological investigation.
- c. A topographical survey.
- d. Any other study or investigation to determine the environmental acceptability or feasibility of the use of the site for any particular facility.
- e. Any work to provide access to the site for any of the purposes specified in a., b., c., or d.

**COMPLIANCE PROJECT MANAGER (CPM) RESPONSIBILITIES**

A CPM will oversee the compliance monitoring and shall be responsible for:

1. ensuring that the design, construction, operation, and closure of the project facilities is in compliance with the terms and conditions of the Commission Decision;
2. resolving complaints;
3. processing post-certification changes to the conditions of certification, project description, and ownership or operational control;
4. documenting and tracking compliance filings; and,
5. ensuring that the compliance files are maintained and accessible.

The CPM is the contact person for the Energy Commission and will consult with appropriate responsible agencies and the Energy Commission when handling disputes, complaints and amendments.

All project compliance submittals are submitted to the CPM for processing. Where a submittal required by a condition of certification requires CPM approval, it should be understood that the approval would involve all appropriate staff and management.

The Commission has established a toll free compliance telephone number of **1-800-858-0784** for the public to contact the Commission about power plant construction or operation-related questions, complaints or concerns.

### ***PRE-CONSTRUCTION AND PRE-OPERATION COMPLIANCE MEETING***

The CPM may schedule pre-construction and pre-operation compliance meetings prior to the projected start-dates of construction, plant operation, or both. The purpose of these meetings will be to assemble both the Energy Commission's and the project owner's technical staff to review the status of all pre-construction or pre-operation requirements contained in the Energy Commission's conditions of certification to confirm that they have been met, or if they have not been met, to ensure that the proper action is taken. In addition, these meetings shall ensure, to the extent possible, that Energy Commission conditions will not delay the construction and operation of the plant due to oversight or inadvertence and to preclude any last minute, unforeseen issues from arising. Pre-construction meetings held during the certification process must be publicly noticed unless they are confined to administrative issues and processes.

### ***ENERGY COMMISSION RECORD***

The Energy Commission shall maintain as a public record, in either the Compliance file or Docket file, for the life of the project (or other period as required):

1. all documents demonstrating compliance with any legal requirements relating to the construction and operation of the facility;
2. all monthly and annual compliance reports filed by the project owner;
3. all complaints of noncompliance filed with the Energy Commission; and,
4. all petitions for project or condition changes and the resulting staff or Energy Commission action taken.

### **PROJECT OWNER RESPONSIBILITIES**

It is the responsibility of the project owner to ensure that the general compliance conditions and the conditions of certification are satisfied. The general compliance conditions regarding post-certification changes specify measures that the project owner must take when requesting changes in the project design, compliance conditions, or ownership. The post-certification changes do not include changes related to replacement of the simple-cycle power plant with a combined-cycle power plant pursuant to section 25552 of the Public Resources Code. All facility changes related to replacement of the power plant will be addressed through the review of an

Application for Certification for the replacement combined-cycle power plant. Failure to comply with any of the conditions of certification or the general compliance conditions may result in reopening of the case and revocation of Energy Commission certification, an administrative fine, or other action as appropriate.

## **ACCESS**

The CPM, responsible Energy Commission staff, and delegate agencies or consultants, shall be guaranteed and granted unrestricted access to the power plant site, related facilities, project-related staff, and the records maintained on site, for the purpose of conducting audits, surveys, inspections, or general site visits. Although the CPM will normally schedule site visits on dates and times agreeable to the project owner, the CPM reserves the right to make unannounced visits at any time.

## **COMPLIANCE RECORD**

The project owner shall maintain project files on-site or at an alternative site approved by the CPM, for the life of the project. The files shall contain copies of all “as-built” drawings, all documents submitted as verification for conditions, and all other project-related documents for the life of the project, unless a lesser period is specified by the conditions of certification.

Energy Commission staff and delegate agencies shall, upon request to the project owner, be given unrestricted access to the files.

## **COMPLIANCE VERIFICATIONS**

Each condition of certification is followed by a means of “verification”. The verification describes the Energy Commission’s procedure(s) to ensure post-certification compliance with adopted conditions. The verification procedures, unlike the conditions, may be modified, as necessary by the CPM, and in most cases without full Energy Commission approval.

Verification of compliance with the conditions of certification can be accomplished by:

- reporting on the work done and providing the pertinent documentation in monthly and/or annual compliance reports filed by the project owner or authorized agent as required by the specific conditions of certification;
- appropriate letters from delegate agencies verifying compliance;
- Energy Commission staff audits of project records; and/or
- Energy Commission staff inspections of mitigation and/or other evidence of mitigation.

Verification lead times (e.g., 90, 60 and 30-days) associated with start of construction may require the project owner to file submittals during the certification process, particularly if construction is planned to commence shortly after certification.



A cover letter from the project owner or authorized agent is required for all compliance submittals and correspondence pertaining to compliance matters. **The cover letter subject line shall identify the involved condition(s) of certification by condition number and include a brief description of the subject of the submittal.** The project owner shall also identify those submittals **not** required by a condition of certification with a statement such as: "This submittal is for information only and is not required by a specific condition of certification." When submitting supplementary or corrected information, the project owner shall reference the date of the previous submittal.

The project owner is responsible for the delivery and content of all verification submittals to the CPM, whether such condition was satisfied by work performed by the project owner or an agent of the project owner.

All submittals shall be addressed as follows:

**Compliance Project Manager  
California Energy Commission  
1516 Ninth Street (MS-2000)  
Sacramento, CA 95814**

If the project owner desires Energy Commission staff action by a specific date, they shall so state in their submittal and include a detailed explanation of the effects on the project if this date is not met.

## ***COMPLIANCE REPORTING***

There are two different compliance reports that the project owner must submit to assist the CPM in tracking activities and monitoring compliance with the terms and conditions of the Commission Decision. During construction, the project owner or authorized agent will submit Monthly Compliance Reports. During operation, an Annual Compliance Report must be submitted. These reports, and the requirement for an accompanying compliance matrix, are described below. The majority of the conditions of certification require that compliance submittals be submitted to the CPM in the monthly or annual compliance reports.

## **COMPLIANCE MATRIX**

A compliance matrix shall be submitted by the project owner to the CPM along with each monthly and annual compliance report. The compliance matrix is intended to provide the CPM with the current status of all compliance conditions in a spreadsheet format. The compliance matrix must identify:

1. the technical area,
2. the condition number,
3. a brief description of the verification action or submittal required by the condition,
4. the date the submittal is required (e.g., 60 days prior to construction, after final inspection, etc.),

5. the expected or actual submittal date,
6. the date a submittal or action was approved by the Chief Building Official (CBO), CPM, or delegate agency, if applicable, and
7. the compliance status for each condition (e.g., “not started”, “in progress” or “completed date”).

Completed or satisfied conditions do not need to be included in the compliance matrix after they have been identified as completed/satisfied in at least one monthly or annual compliance report.

#### **PRE-CONSTRUCTION MATRIX**

Prior to commencing construction a compliance matrix addressing only those conditions that must be fulfilled before the start of construction shall be submitted by the project owner to the CPM. This matrix will be included with the project owner's **first** compliance submittal. It will be in the same format as the compliance matrix referenced above.

#### **TASKS PRIOR TO START OF CONSTRUCTION**

Construction shall not commence until the pre-construction matrix is submitted, all pre-construction conditions have been complied with, and the CPM has issued a letter to the project owner authorizing construction. Project owners frequently anticipate starting project construction as soon as the project is certified. In some cases it may be necessary for the project owner to file submittals prior to certification if the required lead-time for a required compliance event extends beyond the date anticipated for start of construction. It is also important that the project owner understand that pre-construction activities that are initiated prior to certification are performed at the owner's own risk. Failure to allow specified lead-time may cause delays in start of construction.

Various lead times for verification submittals to the CPM for conditions of certification are established to allow sufficient staff time to review and comment, and if necessary, allow the project owner to revise the submittal in a timely manner. This will ensure that project construction may proceed according to schedule.

#### **MONTHLY COMPLIANCE REPORT**

The first Monthly Compliance Report is due the month following the Energy Commission business meeting date on which the project was approved, unless otherwise agreed to by the CPM. The first Monthly Compliance Report shall include an initial list of dates for each of the events identified on the Key Events List. The Key Events List is found at the end of this section.

During pre-construction and construction of the project, the project owner or authorized agent shall submit an original and five copies of the Monthly Compliance Report within 10 working days after the end of each reporting month. Monthly Compliance Reports shall be clearly identified for the month being reported. The reports shall contain at a minimum:

1. a summary of the current project construction status, a revised/updated schedule if there are significant delays, and an explanation of any significant changes to the schedule;
2. documents required by specific conditions to be submitted along with the Monthly Compliance Report. Each of these items must be identified in the transmittal letter, and should be submitted as attachments to the Monthly Compliance Report;
3. an initial, and thereafter updated, compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
4. a list of conditions which have been satisfied during the reporting period, and a description or reference to the actions which satisfied the condition;
5. a list of any submittal deadlines that were missed accompanied by an explanation and an estimate of when the information will be provided;
6. a cumulative listing of any approved changes to conditions of certification;
7. a listing of any filings with, or permits issued by, other governmental agencies during the month;
8. a projection of project compliance activities scheduled during the next two months. The project owner shall notify the CPM as soon as any changes are made to the project construction schedule that would affect compliance with conditions of certification;
9. a listing of the month's additions to the on-site compliance file; and
10. any requests to dispose of items that are required to be maintained in the project owner's compliance file.
11. a listing of complaints, notices of violation, official warnings, and citations received during the month; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

#### **ANNUAL COMPLIANCE REPORT**

After the air district has issued a Permit to Operate, the project owner shall submit Annual Compliance Reports instead of Monthly Compliance Reports. The reports are for each year of commercial operation and are due to the CPM each year at a date agreed to by the CPM. Annual Compliance Reports shall be submitted over the life of the project unless otherwise specified by the CPM. Each Annual Compliance Report shall identify the reporting period and shall contain the following:

1. an updated compliance matrix which shows the status of all conditions of certification (fully satisfied and/or closed conditions do not need to be included in the matrix after they have been reported as closed);
2. a summary of the current project operating status and an explanation of any significant changes to facility operations during the year;
3. documents required by specific conditions to be submitted along with the Annual Compliance Report. Each of these items must be identified in the transmittal

letter, and should be submitted as attachments to the Annual Compliance Report;

4. a cumulative listing of all post-certification changes approved by the Energy Commission or cleared by the CPM;
5. an explanation for any submittal deadlines that were missed, accompanied by an estimate of when the information will be provided;
6. a listing of filings made to, or permits issued by, other governmental agencies during the year;
7. a projection of project compliance activities scheduled during the next year;
8. a listing of the year's additions to the on-site compliance file, and
9. an evaluation of the on-site contingency plan for unexpected facility closure, including any suggestions necessary for bringing the plan up to date [see General Conditions for Facility Closure addressed later in this section].
10. a listing of complaints, notices of violation, official warnings, and citations received during the year; a description of the resolution of any complaints which have been resolved, and the status of any unresolved complaints.

### ***CONFIDENTIAL INFORMATION***

Any information, which the project owner deems confidential shall be submitted to the Energy Commission's Docket with an application for confidentiality pursuant to Title 20, California Code of Regulations, section 2505(a). Any information, which is determined to be confidential, shall be kept confidential as provided for in Title 20, California Code of Regulations, section 2501 et. seq.

### ***DEPARTMENT OF FISH AND GAME FILING FEE***

Pursuant to the provisions of Fish and Game Code Section 711.4, the project owner shall pay a filing fee in the amount of eight hundred and fifty dollars (\$850). The payment instrument shall be provided to the Commission's Project Manager at the time of project certification and shall be made payable to the California Department of Fish and Game. The Commission's Project Manager will submit the payment to the Office of Planning and Research at the time of filing of the notice of decision pursuant to Public Resources Code Section 21080.5.

### ***REPORTING OF COMPLAINTS, NOTICES, AND CITATIONS***

Prior to the start of construction, the project owner must send a letter to property owners living within 1,000 feet of the project notifying them of a telephone number to contact project representatives with questions, complaints or concerns. If the telephone is not staffed 24 hours per day, it shall include automatic answering, with date and time stamp recording. The telephone number shall be posted at the project site and easily visible to passersby during construction and operation.

In addition to the monthly and annual compliance reporting requirements described above, the project owner shall report and provide copies of all complaint forms, notices of violation, notices of fines, official warnings, and citations, within 10 days of receipt, to the CPM. Complaints shall be logged and numbered. Noise

complaints shall be recorded on the form provided in the **NOISE** conditions of certification. All other complaints shall be recorded on the complaint form on the following page.

## COMPLAINT REPORT/RESOLUTION FORM

PROJECT NAME: AFC Number:
<b>COMPLAINT LOG NUMBER</b> _____ Complainant's name and address:   Phone number:
Date and time complaint received: Indicate if by telephone or in writing (attach copy if written): Date of first occurrence:
Description of complaint (including dates, frequency, and duration):
Findings of investigation by plant personnel:   Indicate if complaint relates to violation of a CEC requirement: Date complainant contacted to discuss findings:
Description of corrective measures taken or other complaint resolution:   Indicate if complainant agrees with proposed resolution: If not, explain:   Other relevant information:
If corrective action necessary, date completed: Date first letter sent to complainant: _____ (copy attached) Date final letter sent to complainant: _____ (copy attached)
This information is certified to be correct. Plant Manager's Signature: _____ Date: _____

(Attach additional pages and supporting documentation, as required.)

## **FACILITY CLOSURE**

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Phase I of UGGPP is being considered under section 25552 of the Public Resources Code. Under the terms of this section, the project must either “cease to operate and the permit will terminate within three years... [or] be modified, replaced, or removed within a period of three years with a combined-cycle power plant...” (Pub. Resources Code §25552(e)(5)). Any conversion of the simple-cycle power plant to a combined-cycle power plant will require the submittal of an Application for Certification (AFC). If an AFC is filed and the replacement project is certified, that certification will include appropriate conditions for the transition from the Phase I simple-cycle power plant to the combined-cycle power plant. If a replacement combined-cycle power plant is not certified, the Phase I certification will terminate three years after the date of certification.

If the power plant ceases operation and is closed down, it will be necessary to ensure that the closure occurs in such a way that public health and safety and the environment are protected from adverse impacts. Although the project setting for this project does not appear, at this time, to present any special or unusual closure problems, it is impossible to foresee what the environment will be when the project ceases operation. Therefore, provisions must be made which provide the flexibility to deal with the specific situation and project setting which that exist at the time of closure. LORS pertaining to facility closure are identified in the sections dealing with each technical area. Facility closure will be consistent with LORS in effect at the time of closure.

There are at least three circumstances in which a facility closure can take place before the three-year certification expiration: planned closure, unexpected temporary closure and unexpected permanent closure.

### **PLANNED CLOSURE**

A planned closure occurs at the end of a project's life, when the facility is closed in an anticipated, orderly manner, at the end of its useful economic or mechanical life, or due to gradual obsolescence.

### **UNEXPECTED TEMPORARY CLOSURE**

An unplanned unexpected temporary closure occurs when the facility is closed suddenly and/or unexpectedly, on a short-term basis, due to unforeseen circumstances such as a natural disaster, or an emergency.

### **UNEXPECTED PERMANENT CLOSURE**

An unplanned unexpected permanent closure occurs if the project owner closes the facility suddenly and/or unexpectedly, on a permanent basis. This includes unexpected closure where the owner remains accountable for implementing the on-site contingency plan. It can also include unexpected closure where the project owner is unable to implement the contingency plan, and the project is essentially abandoned.

## **GENERAL CONDITIONS FOR FACILITY CLOSURE**

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### **PLANNED CLOSURE**

In order to ensure that a planned facility closure does not create adverse impacts, a closure process that provides for careful consideration of available options and applicable laws, ordinances, regulations, standards, and local/regional plans in existence at the time of closure, will be undertaken. To ensure adequate review of a planned project closure, the project owner shall submit a proposed facility closure plan to the Energy Commission for review and approval at least twelve months prior to commencement of closure activities (or other period of time agreed to by the CPM). The project owner shall file 120 copies (or other number of copies agreed upon by the CPM) of a proposed facility closure plan with the Energy Commission. The plan shall:

1. identify and discuss any impacts and mitigation to address significant adverse impacts associated with proposed closure activities and to address facilities, equipment, or other project related remnants that will remain at the site.
2. identify a schedule of activities for closure of the power plant site, transmission line corridor, and all other appurtenant facilities constructed as part of the project;
3. identify any facilities or equipment intended to remain on site after closure, the reason, and any future use; and
4. address conformance of the plan with all applicable laws, ordinances, regulations, standards, local/regional plans in existence at the time of facility closure, and applicable conditions of certification.

Also, in the event that there are significant issues associated with the proposed facility closure plan's approval, or the desires of local officials or interested parties are inconsistent with the plan, the CPM shall hold one or more workshops and/or the Commission may hold public hearings as part of its approval procedure.

In addition, prior to submittal of the proposed facility closure plan, a meeting shall be held between the project owner and the Commission CPM for the purpose of discussing the specific contents of the plan.

As necessary, prior to, or during the closure plan process, the project owner shall take appropriate steps to eliminate any immediate threats to public health and safety and the environment, but shall not commence any other closure activities, until Commission approval of the facility closure plan is obtained.

### **UNEXPECTED TEMPORARY CLOSURE**

In order to ensure that public health and safety and the environment are protected in the event of an unexpected temporary facility closure, it is essential to have an on-site contingency plan in place. The on-site contingency plan will help to ensure that all necessary steps to mitigate public health and safety, and environmental impacts, are taken in a timely manner.



The project owner shall submit an on-site contingency plan for CPM review and approval. The plan shall be submitted no less than 60 days (or other time agreed to by the CPM) prior to commencement of commercial operation. The approved plan must be in place prior to commercial operation of the facility and shall be kept at the site at all times.

The project owner, in consultation with the CPM, will update the on-site contingency plan as necessary. The CPM may require revisions to the on-site contingency plan over the life of the project. In the annual compliance reports submitted to the Energy Commission, the project owner will review the on-site contingency plan, and recommend changes to bring the plan up to date. Any changes to the plan must be approved by the CPM.

The on-site contingency plan shall provide for taking immediate steps to secure the facility from trespassing or encroachment. In addition, for closures of more than 90 days (unless other arrangements are agreed to by the CPM), the plan shall provide for removal of hazardous materials and hazardous wastes, draining of all chemicals from storage tanks and other equipment and the safe shutdown of all equipment (also see specific conditions of certification for the technical areas of Hazardous Materials Management and Waste Management).

In addition, consistent with requirements under unexpected permanent closure addressed below, the nature and extent of insurance coverage, and major equipment warranties must also be included in the on-site contingency plan. In addition, the status of the insurance coverage and major equipment warranties must be updated in the annual compliance reports.

In the event of an unexpected temporary closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the circumstances and expected duration of the closure.

If the CPM determines that a temporary closure is likely to be permanent, or for a duration of more than twelve months, a closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the CPM's determination (or other period of time agreed to by the CPM).

## **UNEXPECTED PERMANENT CLOSURE**

The on-site contingency plan required for unexpected temporary closure shall also cover unexpected permanent facility closure. All of the requirements specified for unexpected temporary closure shall also apply to unexpected permanent closure.

In addition, the on-site contingency plan shall address how the project owner will ensure that all required closure steps will be successfully undertaken in the unlikely event of abandonment.

In the event of an unexpected permanent closure, the project owner shall notify the CPM, as well as other responsible agencies, by telephone, fax, e-mail, etc., within 24 hours and shall take all necessary steps to implement the on-site contingency plan. The project owner shall keep the CPM informed of the status of all closure activities.

A closure plan consistent with that for a planned closure shall be developed and submitted to the CPM within 90 days of the permanent closure (or other period of time agreed to by the CPM).

## **DELEGATE AGENCIES**

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To the extent permitted by law, the Energy Commission may delegate authority for compliance verification and enforcement to various state and local agencies that have expertise in subject areas where specific requirements have been established as a condition of certification. If a delegate agency does not participate in this program, the Energy Commission staff will establish an alternative method of verification and enforcement. Energy Commission staff reserves the right to independently verify compliance.

In performing construction and operation monitoring of the project, the Energy Commission staff acts as, and has the authority of, the Chief Building Official (CBO). The Commission staff retains this authority when delegating to a local CBO. Delegation of authority for compliance verification includes the authority for enforcing codes, the responsibility for code interpretation where required, and the authority to use discretion, as necessary, in implementing the various codes and standards.

Whenever an agency's responsibility for a particular area is transferred by law to another entity, all references to the original agency shall be interpreted to apply to the successor entity.

## **ENFORCEMENT**

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The Energy Commission's legal authority to enforce the terms and conditions of its Decision is specified in Public Resources Code sections 25534 and 25900. The Energy Commission may amend or revoke the certification for any facility, and may impose a civil penalty for any significant failure to comply with the terms or conditions of the Commission Decision. The specific action and amount of any fines the Commission may impose would take into account the specific circumstances of the incident(s). This would include such factors as the previous compliance history, whether the cause of the incident involves willful disregard of LORS, inadvertence, unforeseeable events, and other factors the Commission may consider.

Moreover, to ensure compliance with the terms and conditions of certification and applicable laws, ordinances, regulations, and standards, delegate agencies are

authorized to take any action allowed by law in accordance with their statutory authority, regulations, and administrative procedures.

## **NONCOMPLIANCE COMPLAINT PROCEDURES**

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Any person or agency may file a complaint alleging noncompliance with the conditions of certification. Such a complaint will be subject to review by the Energy Commission pursuant to Title 20, California Code of Regulations, section 1230 et. seq., but in many instances the noncompliance can be resolved by using the informal dispute resolution process. Both the informal and formal complaint procedure, as described in current State law and regulations, are described below. They shall be followed unless superseded by current law or regulations.

### **INFORMAL DISPUTE RESOLUTION PROCEDURE**

The following procedure is designed to informally resolve disputes concerning interpretation of compliance with the requirements of this compliance plan. The project owner, the Energy Commission, or any other party, including members of the public, may initiate this procedure for resolving a dispute. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents.

This procedure may precede the more formal complaint and investigation procedure specified in Title 20, California Code of Regulations, section 1230 et. seq., but is not intended to be a substitute for, or prerequisite to it. This informal procedure may not be used to change the terms and conditions of certification as approved by the Energy Commission, although the agreed upon resolution may result in a project owner, or in some cases the Energy Commission staff, proposing an amendment.

The procedure encourages all parties involved in a dispute to discuss the matter and to reach an agreement resolving the dispute. If a dispute cannot be resolved, then the matter must be referred to the full Energy Commission for consideration via the complaint and investigation process. The procedure for informal dispute resolution is as follows:

#### ***REQUEST FOR INFORMAL INVESTIGATION***

Any individual, group, or agency may request the Energy Commission to conduct an informal investigation of alleged noncompliance with the Energy Commission's terms and conditions of certification. All requests for informal investigations shall be made to the designated CPM.

Upon receipt of a request for informal investigation, the CPM shall promptly notify the project owner of the allegation by telephone and letter. All known and relevant information of the alleged noncompliance shall be provided to the project owner and to the Energy Commission staff. The CPM will evaluate the request and the information to determine if further investigation is necessary. If the CPM finds that further investigation is necessary, the project owner will be asked to promptly investigate the matter and within seven (7) working days of the CPM's request, provide a written report of the results of the investigation, including corrective

measures proposed or undertaken, to the CPM. Depending on the urgency of the noncompliance matter, the CPM may conduct a site visit and/or request the project owner to provide an initial report, within forty-eight (48) hours, followed by a written report filed within seven (7) days.

### ***REQUEST FOR INFORMAL MEETING***

In the event that either the party requesting an investigation or the Energy Commission staff is not satisfied with the project owner's report, investigation of the event, or corrective measures undertaken, either party may submit a written request to the CPM for a meeting with the project owner. Such request shall be made within fourteen (14) days of the project owner's filing of its written report. Upon receipt of such a request, the CPM shall:

1. immediately schedule a meeting with the requesting party and the project owner, to be held at a mutually convenient time and place;
2. secure the attendance of appropriate Energy Commission staff and staff of any other agency with expertise in the subject area of concern as necessary;
3. conduct such meeting in an informal and objective manner so as to encourage the voluntary settlement of the dispute in a fair and equitable manner; and,
4. after the conclusion of such a meeting, promptly prepare and distribute copies to all in attendance and to the project file, a summary memorandum which fairly and accurately identifies the positions of all parties and any conclusions reached. If an agreement has not been reached, the CPM shall inform the complainant of the formal complaint process and requirements provided under Title 20, California Code of Regulations, section 1230 et. seq.

### **FORMAL DISPUTE RESOLUTION PROCEDURE-COMPLAINTS AND INVESTIGATIONS**

If either the project owner, Energy Commission staff, or the party requesting an investigation is not satisfied with the results of the informal dispute resolution process, such party may file a complaint or a request for an investigation with the Energy Commission's General Counsel. Disputes may pertain to actions or decisions made by any party including the Energy Commission's delegate agents. Requirements for complaint filings and a description of how complaints are processed are in Title 20, California Code of Regulations, section 1230 et. seq.

The Chairman, upon receipt of a written request stating the basis of the dispute, may grant a hearing on the matter, consistent with the requirements of noticing provisions. The Commission shall have the authority to consider all relevant facts involved and make any appropriate orders consistent with its jurisdiction (Title 20, California Code of Regulations, sections 1232 - 1236).

## **POST CERTIFICATION CHANGES TO THE COMMISSION DECISION: AMENDMENTS, INSIGNIFICANT PROJECT CHANGES AND VERIFICATION CHANGES**

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The project owner must petition the Energy Commission, pursuant to Title 20, California Code of Regulations, section 1769, to 1) delete or change a condition of certification; 2) modify the project design or operational requirements; and 3) transfer ownership or operational control of the facility.

A petition is required for **amendments** and for **insignificant project changes**. For verification changes, a letter from the project owner is sufficient. In all cases, the petition or letter requesting a change should be submitted to the Commission's Docket in accordance with Title 20, California Code of Regulations, section 1209. The criteria that determine which type of change process applies are explained below.

### **AMENDMENT**

A proposed change will be processed as an amendment if it involves a change to the requirement or protocol (and in some cases the verification) portion of a condition of certification, an ownership or operator change, or a potential significant environmental impact.

### **INSIGNIFICANT PROJECT CHANGE**

The proposed change will be processed as an insignificant project change if it does not require changing the language in a condition of certification, have a potential for significant environmental impact, and cause the project to violate laws, ordinances, regulations or standards.

### **VERIFICATION CHANGE**

The proposed change will be processed as a verification change if it involves only the language in the verification portion of the condition of certification. This procedure can only be used to change verification requirements that are of an administrative nature, usually the timing of a required action. In the unlikely event that verification language contains technical requirements, the proposed change must be processed as an amendment.

# KEY EVENT LIST

PROJECT: \_\_\_\_\_

DOCKET #: \_\_\_\_\_

COMPLIANCE PROJECT MANAGER: \_\_\_\_\_

## EVENT DESCRIPTION

## DATE

Certification Date	
Online Date	
<b>POWER PLANT SITE ACTIVITIES</b>	
Start Site Mobilization	
Start Ground Disturbance	
Start Rough Grading	
Start Construction	
First Combustion of Gas Turbine	
Start Commercial Operation	
Complete All Construction	
<b>TRANSMISSION LINE ACTIVITIES</b>	
Start T/L Construction	
Synchronization with Grid	
Complete T/L Construction	
<b>FUEL SUPPLY LINE ACTIVITIES</b>	
Start Fuel Supply Line Construction	
Complete Fuel Supply Line Construction	
<b>WATER SUPPLY LINE ACTIVITIES</b>	
Start Water Supply Line Construction	
Complete Water Supply Line Construction	

## PREPARATION TEAM

Executive Summary .....	Kevin Kennedy
Introduction .....	Kevin Kennedy
Project Description .....	Kevin Kennedy
Air Quality .....	Will Walters and Nasrin Behmanesh
Alternatives .....	Kevin Kennedy
Biological Resources .....	Bradley S. Norling and Linda Spiegel
Compliance Monitoring and Facility Closure .....	Connie Bruins
Cultural Resources .....	Gary Reinoehl
Facility Design .....	Kisabuli, Steve Baker, and Al McCuen
Geology and Paleontology .....	Robert Anderson
Hazardous Materials Management .....	Rick Tyler
Land Use .....	Amanda Stennick
Noise .....	Paul Miller
Power Plant Reliability .....	Steve Baker
Power Plant Efficiency .....	Steve Baker
Public Health .....	Obed Odoemelum
Socioeconomic Resources .....	Jim Adams
Soil and Water Resources .....	Michael Krolak and Joe O'Hagan
Traffic and Transportation .....	David Flores
Transmission System Engineering .....	Mark Hesters and Al McCuen
Visual Resources .....	Eric Knight
Waste Management .....	Michael Ringer
Worker Safety and Fire Protection .....	Rick Tyler

Project Secretary ..... Mary Dyas

Support Staff ..... Luz Manriquez, Pat Owen